TREK-550
TREK-303

In-Vehicle Computing Box
Smart Display
User manual

Trusted ePlatform Services

ADVANTECH

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Product Warranty (2 years)

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandise authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Declaration of Conformity

This product has passed the CE test for environmental specifications. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

FCC Class B

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FM

This equipment has passed the FM certification. According to the National Fire Protection Association, work sites are classified into different classes, divisions and groups, based on hazard considerations. This equipment is compliant with the specifications of Class I, Division 2, Groups A, B, C and D indoor hazards.

Technical Support and Assistance

1. Visit the Advantech web site at **www.advantech.com/support** for the latest information about the product.
2. Contact the distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

Warnings, Cautions and Notes

Warning!   _Warnings indicate conditions, which if not observed, can cause personal Injury!_

Caution!   _Cautions are included to help you avoid damaging hardware or losing data. e.g._

There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Note!   _Notes provide optional additional information._

Document Feedback

To assist us in making improvements to this manual, we would welcome comments and constructive criticism. Send all such in writing to: support@advantech.com

Packing List

Before setting up, check that the items listed below are included, in good condition. If any item does not accord with the table, please contact your dealer immediately.

- TREK-550 series In-Vehicle Computing Box
- USB/Audio Cable lock
- Warranty card
- Power cord: DC power inlet cable (180 cm - for TREK-550 only)
- Video in/CAN cable
- ''Drivers, Utilities and User Manual" CD-ROM
- End User License Agreement (XPE and WinCE model)

Ordering information

TREK-550-A00E	Intel Atom Z510PT 1.1Ghz bare bone (for GPRS)
TREK-550-A20E	Intel Atom Z510PT 1.1Ghz bare bone (for HSDPA/CDMA)
TREK-550-A40E	Intel Atom Z510PT 1.33Ghz bare bone (GPRS)
TREK-550-A60E	Intel Atom Z510PT 1.33Ghz bare bone (HSDPA/CDMA)
TREK-550-GA0E	Intel Atom Z510PT 1.1Ghz , GPS, GPRS
TREK-550-HA0E	Intel Atom Z510PT 1.1Ghz , GPS, HSDPA
TREK-550-CA0E	Intel Atom Z510PT 1.1Ghz , GPS, CDMA
TREK-550-GWBXPEA0E	Intel Atom Z510PT 1.1Ghz, GPRS, WLAN, BT, XPe
TREK-550-CWBXPEA0E	Intel Atom Z510PT 1.1Ghz, CDMA, WLAN, BT, XPe
TREK-303R-HA0E	7" vehicle display system, 800x480 resolution, with 4 wire resistive touch screen, 2-watts speaker.

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
15. The power cord or plug is damaged.
16. Liquid has penetrated into the equipment.
17. The equipment has been exposed to moisture.
18. The equipment does not work well, or you cannot get it to work according to the user's manual.
19. The equipment has been dropped and damaged.
20. The equipment has obvious signs of breakage.
21. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.
22. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER, DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.
23. The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70 dB (A).

DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Wichtige Sicherheishinweise

1. Bitte lesen sie Sich diese Hinweise sorgfältig durch.
2. Heben Sie diese Anleitung für den späteren Gebrauch auf.
3. Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen. Verwenden Sie Keine Flüssig-oder Aerosolreiniger. Am besten dient ein angefeuchtetes Tuch zur Reinigung.
4. Die NetzanschluBsteckdose soll nahe dem Gerät angebracht und leicht zugänglich sein.
5. Das Gerät ist vor Feuchtigkeit zu schützen.
6. Bei der Aufstellung des Gerätes ist auf sicheren Stand zu achten. Ein Kippen oder Fallen könnte Verletzungen hervorrufen.
7. Die Belüftungsöffnungen dienen zur Luftzirkulation die das Gerät vor überhitzung schützt. Sorgen Sie dafür, daB diese Öffnungen nicht abgedeckt werden.
8. Beachten Sie beim. AnschluB an das Stromnetz die AnschluBwerte.
9. Verlegen Sie die NetzanschluBleitung so, daB niemand darüber fallen kann. Es sollte auch nichts auf der Leitung abgestellt werden.
10. Alle Hinweise und Warnungen die sich am Geräten befinden sind zu beachten.
11. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädigung vermieden.
12. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. elektrischen Schlag auslösen.
13. Öffnen Sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von authorisiertem Servicepersonal geöffnet werden.
14. Wenn folgende Situationen auftreten ist das Gerät vom Stromnetz zu trennen und von einer qualifizierten Servicestelle zu überprüfen:
15. Netzkabel oder Netzstecker sind beschädigt.
16. Flüssigkeit ist in das Gerät eingedrungen.
17. Das Gerät war Feuchtigkeit ausgesetzt.
18. Wenn das Gerät nicht der Bedienungsanleitung entsprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.
19. Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.
20. Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.
21. VOSICHT: Explisionsgefahr bei unsachgemaben Austausch der Batterie.Ersatz nur durch densellben order einem vom Hersteller empfohlene-mahnlichen Typ. Entsorgung gebrauchter Batterien navh Angaben des Herstellers.
22. ACHTUNG: Es besteht die Explosionsgefahr, falls die Batterie auf nicht fachmännische Weise gewechselt wird. Verfangen Sie die Batterie nur gleicher oder entsprechender Type, wie vom Hersteller empfohlen. Entsorgen Sie Batterien nach Anweisung des Herstellers.
23. Der arbeitsplatzbezogene Schalldruckpegel nach DIN 45 635 Teil 1000 beträgt 70dB(A) oder weiger.

Haftungsausschluss: Die Bedienungsanleitungen wurden entsprechend der IEC-704-1 erstellt. Advantech lehnt jegliche Verantwortung für die Richtigkeit der in diesem Zusammenhang getätigten Aussagen ab.

Safety Precaution - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage.

- To avoid electrical shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.
- Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.

Warning!

1. *Input voltage rated: 6-36 Vdc.*
2. *Transport: carry the unit with both hands and handle with care.*
3. *Maintenance: to properly maintain and clean the surfaces, use only approved products or clean with a dry applicator.*
4. *CompactFlash: Turn off the power before inserting or removing CompactFlash storage cards.*

European Contact information:

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Kolberger Straße 7

D-40599 Düsseldorf, Germany

Tel: 49-211-97477350

Fax: 49-211-97477300

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Chapter 1

General Information

This chapter gives background information on the TREK-550 In-Vehicle Computing Box.

Sections include:
- Introduction
- General Specifications
- Dimensions

1.1 Introduction

The TREK-550 is a dedicated box computer for industrial vehicle fleets, transport trucks, buses and taxis. TREK-550 combined with variety of I/O connectors can be connected to devices like OBD-II or TPMS (Tire Pressure Monitoring System). Dual display/dual audio interfaces supporting different resolutions can deliver different applications to different displays; eg: one application to a fleet driver and another to a digital signage application.

Built-in wireless communications (WWAN, WLAN, BT) enable TREK-550 to send important driver/vehicle/location/cargo information back to the control center. TREK-550 can also operate in extreme environments with features like a wide working temperature range (-30 to 70 degrees). TREK-550 also uses a special design to handle the critical issue of in-vehicle power. Special power protection (ISO7637-2/SAE J1455 Class A/ SAE J1113) and car power management software (Ignition on/off, delay on/off, low battery monitor) prevent electrical noise and surges from impacting the system, guarding against damage from transient car power. TREK-550 also support rear view monitor through connecting video in port. With this feature, driver can real time monitor the environment on two sides of the truck for driving safety. TREK-550 can also support dead-reckoning feature, which means the truck can still be traced even the driver is driving in a tunnel.

Front-Side Connectors
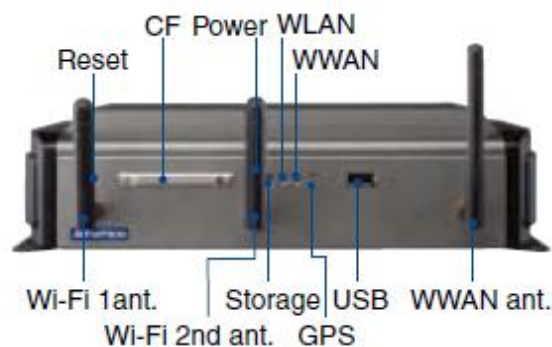
Rear-Side Connectors
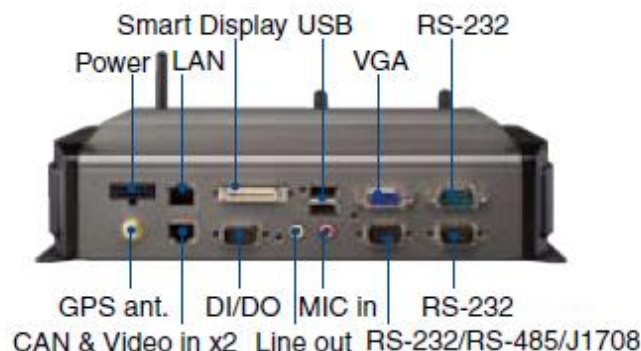
1.2 General Specifications

Key features
- Supports Win CE 6.0, XPE, XP and Linux
- Automotive grade working temperature range (-30° C to 70° C)
- Rich I/O including CAN, LAN, RS-232, RS-485, J1708, isolation 4DI/4DO, Line out, Mic in, USB, and Video-in
- Built-in communication modules, including GSM/GPRS/HSDPA/CDMA, WLAN & Bluetooth
- GPS with AGPS and dead reckoning technology (Gyro & speed line)
- Certifications: CE/FCC/e-mark, MIL-SD810F, ISO 7637-2, SAE J1455, SAE J1113 regulations
- Dual display/audio output for both driver and passenger
- Ignition on/off delay; SW detectable/controllable for car power management

1.2.1 General

- **Dimensions**: (W x H x D): 271 x 149 x 69.7 mm.
- **Weight**: 2 kg.
- **Power supply**:
    - **Input voltage**: 6 ~ 36Vdc, support ignition cold crank
    - **Ignition on/off**
    - **Low battery shut-down protection threshold (optional)**: When the vehicle battery voltage level drops below 11V for more than 30 seconds, TREK-550 will automatically shut down in order to prevent "deep discharge" situations and TREK-550 can be re-activated only when the voltage is > 11V.
    - **Power on delay**: Default 2 seconds. When the TREK-550 is powered on via ignition key, the system will delay 2 seconds to power on.
    - **Power off delay**: Default 5 seconds. When TREK-550 power is controlled by ignition key and turns off by the key (ignition=off), the TREK-550 will start the shut procedure after 5 seconds.
    - **Hard off delay**: Default 30 seconds. When TREK-550 power is controlled by ignition key and turns off by the key (ignition=off), the TREK-550 will cut off the 5VSB power after 30 seconds. In this event when the shutdown process is longer than 30 seconds, the power will be shut down hard, turning off the TREK-550's power and 5VSB.

    Note! *For more detail of function please refer to Chapter 4, Section 4.3.2 of this manual.*

- **Enclosure**: Ruggedized aluminum without ventilation holes.

1.2.2 Standard PC Functions

- **CPU**: Intel Atom Z510PT 1.1Ghz/ Z520PT 1.33Ghz
- **Chipset**: Integrated in LE82US15EE
- **BIOS**: Award 256 KB Flash BIOS, ACPI 2.0 Compliant.
- **System memory**: One 200-pin SODIMM sockets, accepts up to 2 GB DDR2 667 SDRAM
- **Solid state disk**: Supports one 50-pin socket for Compact-Flash type I/II (True PATA mode).
- **Serial ports**: Two RS-232, 5V@500mA,12V@ 250mA, ping9, by jumper selected. One 4-wire RS232,1 x RS485, 1 x J1708 ports.
- **Universal serial bus (USB) port**: Supports up to 4 x USB2.0. (1 x on the front panel, 2 x on the rear panel, the other one is from smart display port.)
- **LAN port**: 1 x 10/100/1000 Ethernet (with LEDs) by RJ45.
- **Video output**: 1 x VGA output by DB-15 (independent display).
- **Video in**: 2 x composite video input selection supported format (for rear view monitor) by RJ-45 connector
- **Mini PCI express bus expansion slot**: Accepts full size mini PCI bus card.
- **Bluetooth**: One Class2 Bluetooth V2.0 + EDR module.
- **Watchdog timer**: 63-level timer intervals automatically generate system reset when the system stops due to a program error or EMI. Jumper selection and software enabled/disabled.
- **RTC Battery**: 3.0 V @ 200 mAH lithium battery.
- **Power management**: Supports power saving modes including Normal/ Standby/Suspend modes. APM 1.2 compliant.
- **Digital I/O**: Optically isolated 4 digital input and 4 digital output
- **CAN bus**: RS-232 baud rate up to 115.2K bps. Open CAN2.0 baud rate up to
- 512kbps.
- **Audio controller**: Intel HD Audio interface.
- Direct sound and Direct Sound 3D acceleration.
- **Audio interface**: One 2W speaker, one microphone. One line out.
- **Optional modules**: 50/16 channels GPS, quad-band GSM/GPRS, MiniPCI express WLAN card.

1.2.3 PCI Express Bus Ethernet Interface

- **Chipset**: Realtek RTL8111C PCI express Ethernet controller.
- **Ethernet interface**: Full compliance with IEEE 802.3, IEEE802.a/b specifications. Includes software drivers and boot ROM that supports both RPL and PXE.
- **1000/100/10Base-T** auto-sensing capability.

1.2.4 Environment

- **Operating temperature**: -30 ~ 70° C
- **Relative humidity**: 10 ~ 95% @ 40° C (non-condensing)
- **Shock**: 30 G peak acceleration (11 msec duration)
- **Certifications**: EMC, CE, FCC, CCC, Emark Safety: CE; CCC, CB.
- **Vibration**: 5 ~ 500 Hz SAE J1455 4.9.4.2, MIL-STD-810F 514.5

1.3   Dimensions
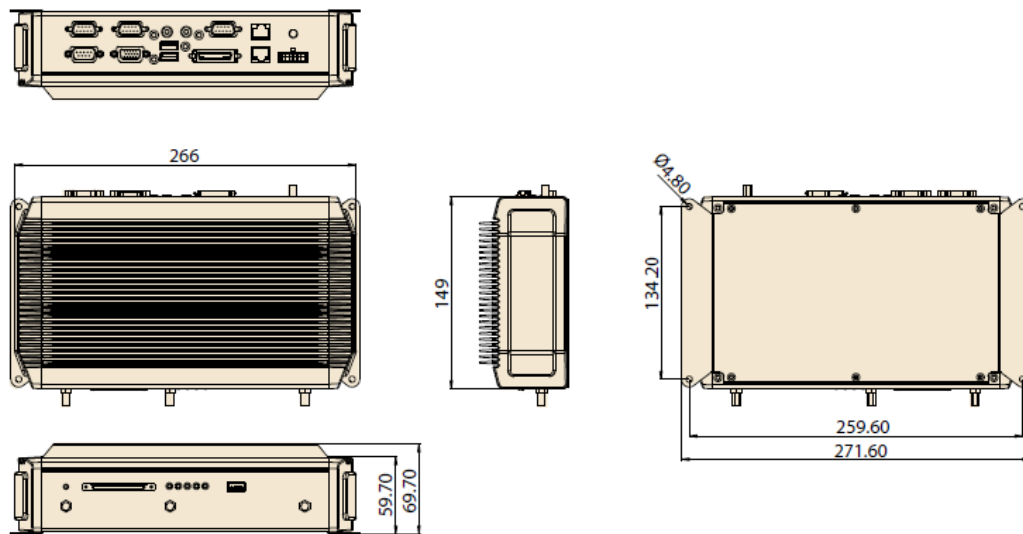
Figure 1.1 TREK-550 dimensions

Chapter **2**

2.1 A Quick Tour of the TREK-550 Computing box.

Before starting to set up the In-Vehicle Computing Box, take a moment to become familiar with the locations and purposes of the controls, drives, connectors and ports, which are illustrated in the figures below. When the Computer box is placed inside truck glove cabinet or under the passenger's seat next to the driver, its front appears as shown in Figure 2.1.
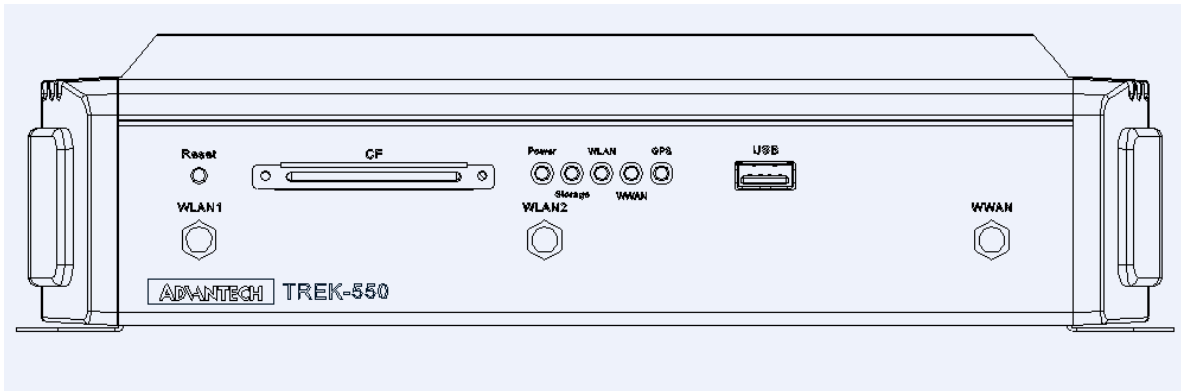
Figure 2.1. Front view of TREK-550
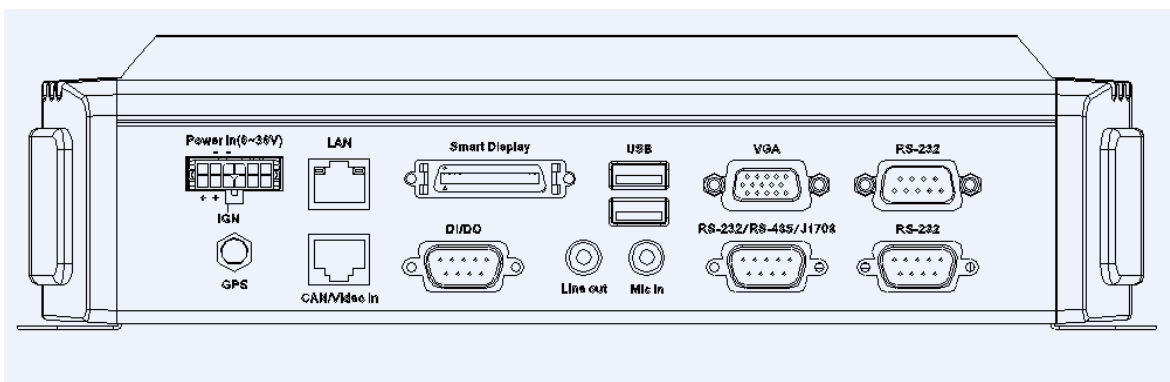
Figure 2.2. Rear view of TREK-550
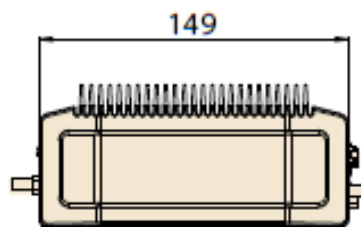
Unit: mm

Figure 2.3. Side view of TREK-550
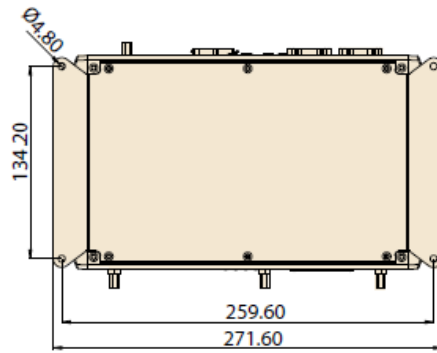
Unit: mm

Figure 2.4. Bottom view of TREK-550
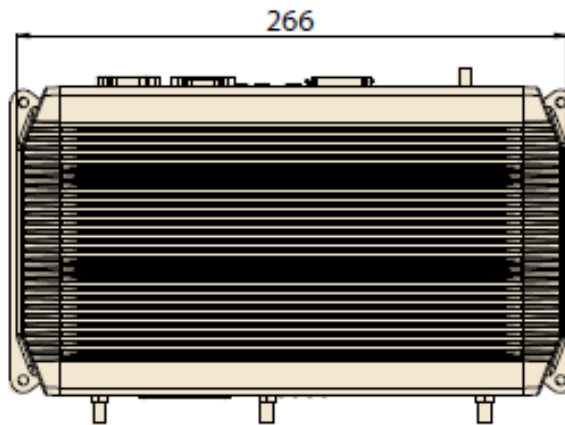
Unit: mm

Figure 2.5. Top view of TREK-550

2.2 Installation Procedures

2.2.1 Connecting the Power Cord

Connect the three pin waterproof power cord to the DC inlet of the In-Vehicle Computing Box. On the open-wire end, one pin is reserved for positive voltage and is marked, "+"; one pin is reserved for ground and is marked, "-"; and, one pin is reserved for the ignition signal with an "ignition" mark.

> **Note!** *Ignition on/off setting: The TREK-550 supports an ignition on/off function so that you can power on/off the TREK-550 via the ignition signal/voltage. Either connect the TREK-550's "ignition" pin to vehicle ignition and the TREK-550 "+-" to "+-"*

Table 2.2.1 Pin Definition of Power Cord		
Pin	**Definition**	**Color**
1	+	Red
3	-	Black
4	Ignition	Org

2.2.2 Power Connector
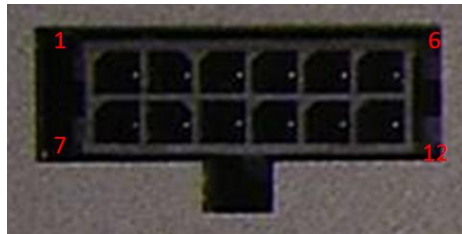
Figure 2.6. Power connector outlook

Molex Manufacturer part no. 0430451200

Table 2.2.2 Pin definition of Power Connector			
Pin	**Signal**	**Pin**	**Signal**
1	Chassis Ground	2	Ground
3	Ground	4	(Reserved)
5	(Reserved)	6	(Reserved)
7	Power Input (6~36 VDC)	8	Power Input (6~36 VDC)
9	Acc Ignition Input	10	Ground
11	(Reserved)	12	Power button Input

Mating power cable
Advantech p/n : 1700018306 A Cable 2*6P-3.0/fuse 180cm TREK
Manufacturer p/n: Best Technology Enterprise 900-1200-180R

Figure 2.7. Power connector photo

Note
Material
1.　UL2464 22A WG 3C+ AEB black L-1985mm – 1pc
2.　UL 1007 22AWG black, red wire L= 50mm – 2pcs
3.　Housing CH3025-2 * 6P (PH3.0) – 1pc
4.　Terminal C3004TOP-2 – 6pcs
5.　Vehicle fuse (5A) -1pc
6.　Label Sticker 10 * 50mm (printing: Ignition) – 1pc
7.　Label Sticker 10 * 25mm (printing: +, -) – 2pcs
8.　Heat shrinkable Tube – 3pcs

Figure 2.8 Power connector pin definition

2.3 Running the BIOS Setup Program

In most cases, the computer will have been properly set up and configured by the dealer or SI prior to delivery. However, it may still be necessary to adjust some of the computer's BIOS (Basic Input-Output System) setup programs to change the system configuration data, like the current date and time, or the specific type of hard drive currently installed.

The setup program is stored in read-only memory (ROM). It can be accessed either when turning on or resetting the computer, by pressing the "Del" key on the keyboard immediately after powering up the computer.

The settings that are specified with the setup program are recorded in a special area of the memory called CMOS RAM. This memory is backed up by a battery so that it will not be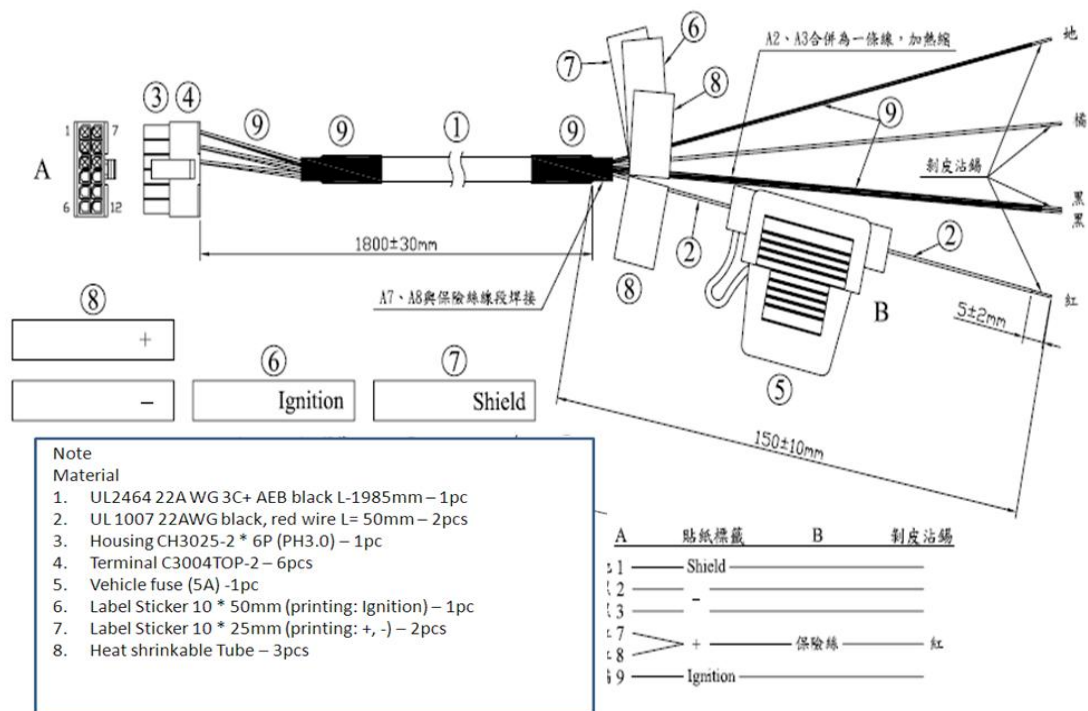 erased when turning off or resetting the system. Whenever the power is turned on, the system reads the settings stored in CMOS RAM and compares them to the equipment check conducted during the "power on self-test" (POST). If an error occurs, an error message is displayed on screen, and the user is prompted to run the setup program.

2.4 Installing System Software

Recent releases of operating systems from major vendors include setup programs which load automatically and guide users through the entire process of operating system installation. The guidelines below help to determine the steps necessary to install your operating system on the computer hard drive.

> *Note!*
>
> *Some distributors and system integrators may have already pre-installed system software prior to shipment of your Vehicle Mounted Computer.*

The BIOS of the computer supports system boots-up directly from the CD-ROM drive whenever it is connected using a USB interface. Insert the system installation CD-ROM into the CD-ROM drive.

Power on the computer, or reset the system by pressing the "Ctrl" + "Alt" + "Del" keys simultaneously. The computer will automatically load the operating system from the diskette or CD-ROM.

When presented with the opening screen of a setup / installation program, simply follow the onscreen instructions. The setup program guides users through preparations of the hard drive, and installation of the operating system.

When presented with an operating system command prompt, like, A:\>, then it is necessary to partition and format the hard drive, and manually copy the operating sys- tem files to it. Refer to the operating system user instructions about partitioning and formatting the hard drive.

2.5 Installing the Drivers

After installing system software, the computer is ready to set up the AMD chipset, VGA, audio, LAN, and touch screen functions. All the pre-requisite drivers are stored on a CD-ROM disc entitled "Drivers and Utilities" (Check the correct wording on the CD, which can be found in the accessory box.)

The utility directory includes multimedia programs. Some drivers and utilities in the CD-ROM disc have their own text files which help users install the drivers and understand their functions.

These files are a very useful supplement to the information in this manual. For more details of driver installation please refers to Chapter 5 to 10 of this manual.

> **Note!** *The drivers and utilities used for the TREK-550 are subject to change without notice. If in doubt, check Advantech's website or contact our*
>
> *application engineers for the latest information regarding drivers and utilities.*

2.6 Programming Function Keys and GPIO/CAN BUS

The Vehicle Mount Computer provides five function keys, GPIO and CAN bus as shown in section 2.1. These functions must be activated with the correct software, that's why we provide an AP library for customers to design their own software. Refer to Appendix C for more detail.

Chapter **3**

Hardware & Peripheral Installation

This chapter details the installation of hardware for TREK-550.

Sections include:

- Overview of Hardware Installation and Upgrading
- Installing the Storage Device and Memory
- Installing Optional Accessories
- Fuse

3.1 Overview of Hardware Installation & Upgrading

The In-Vehicle Computing Box consists of a PC-based computer that is housed in a ruggedized aluminum enclosure. Any maintenance or hardware upgrades can be completed after removing both cover panels.

Warning!

> ***Warning!*** *Do not remove the ruggedized aluminum covers until verifying that no power is flowing within the computer. Power must be switched off and the power cord must be unplugged. Take care in order to avoid injury or damage to the equipment.*

3.2 Installing the Storage Device and Memory

The In-Vehicle Computing Box can only use a Compact Flash Card (CFC) as a storage device. Put the CFC into the CF slot and insert the RAM into the 200-pin SODIMM socket on the main board.

3.3 Installing Optional Accessories

Optional accessories, like mounting kits or other functional modules are available for purchase to complement TREK-550. The following are instructions for accessory installation.

3.3.1 Installing TREK-550 peripheral modules

There are 6 screws on the bottom of TREK-550, if you want to install the peripherals in TREK-550, please use M2 type screw to open the system.
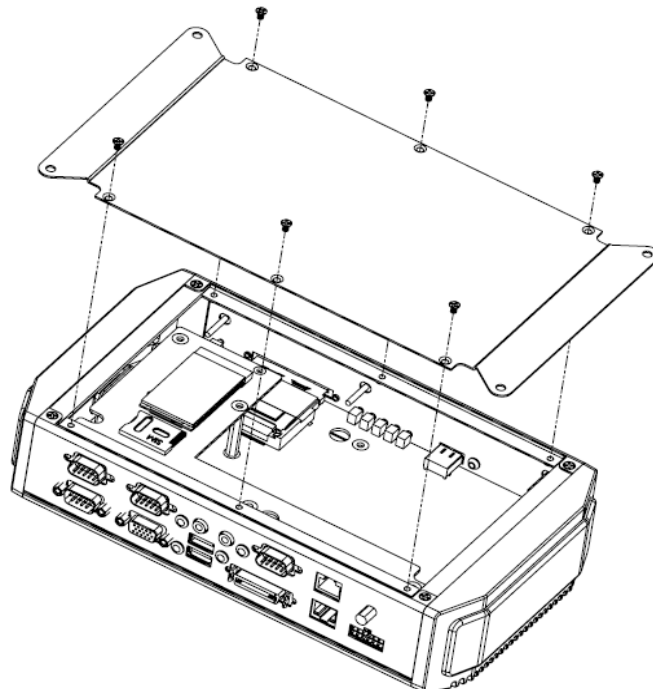
Figure 3.1 Install peripheral in the system

3.3.2 Installing the MiniPCI type WWAN, SIM card and coin battery

The WWAN module is on the Mini PCI slot can be easily installed, just unlock the 6 screws from the bottom cover, you may easily install it, so as SIM card.

WWAN
(GPRS/HSDPA/
CDMA)
Card

SIM
card
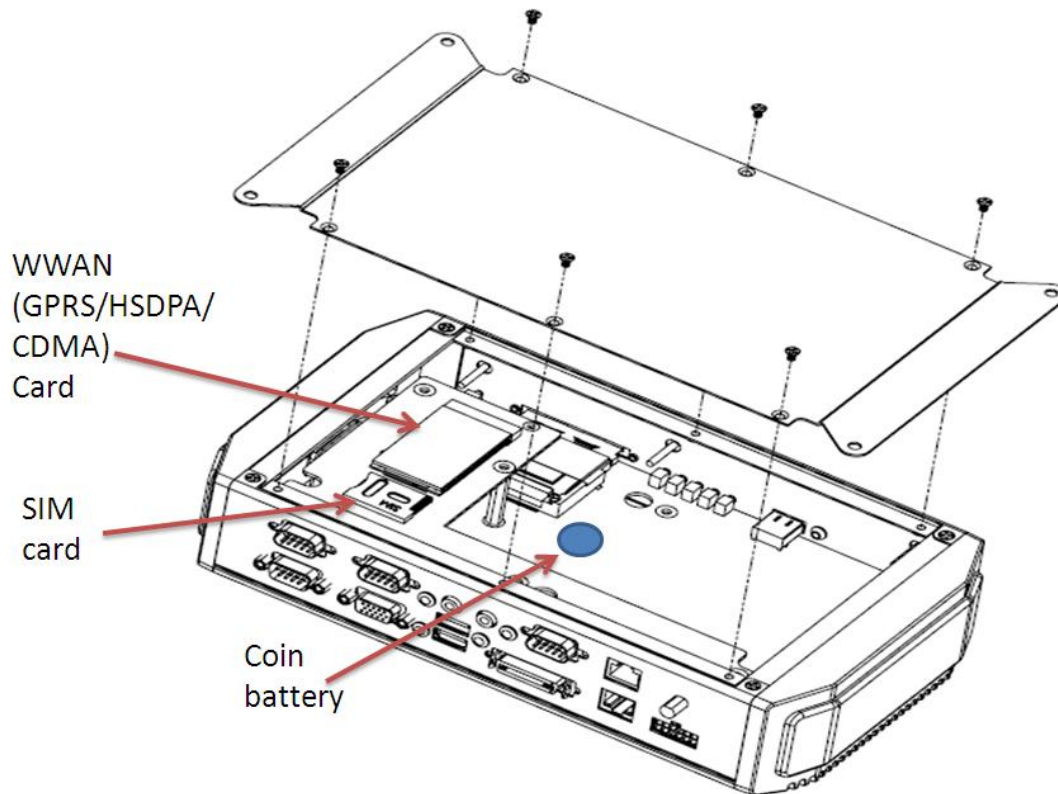
Coin
battery

Figure 3.2 Mini PCI type WWAN module, SIM card and coin battery from bottom view

3.3.3 Installing the MiniPCI type WLAN

The WLAN module is on the Mini PCI slot can be easily installed from the top, just unlock the 6 screws from the top cover, you may easily install it.

WLAN   DDR2 RAM
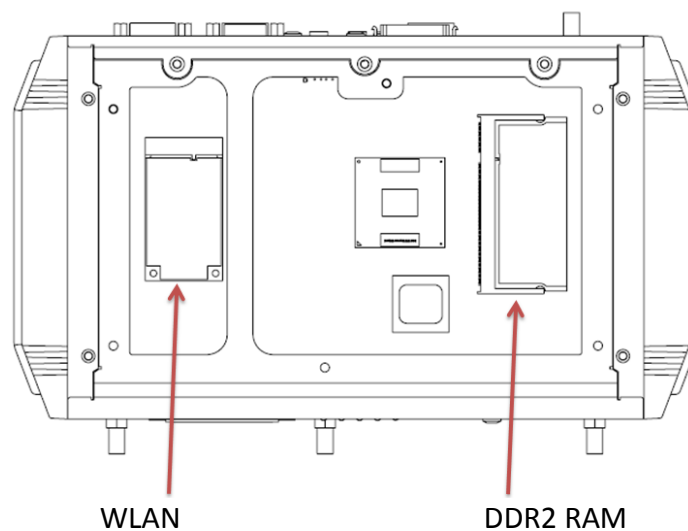
Figure 3.3 Wireless LAN module from top view

3.3.4 Installing CF card
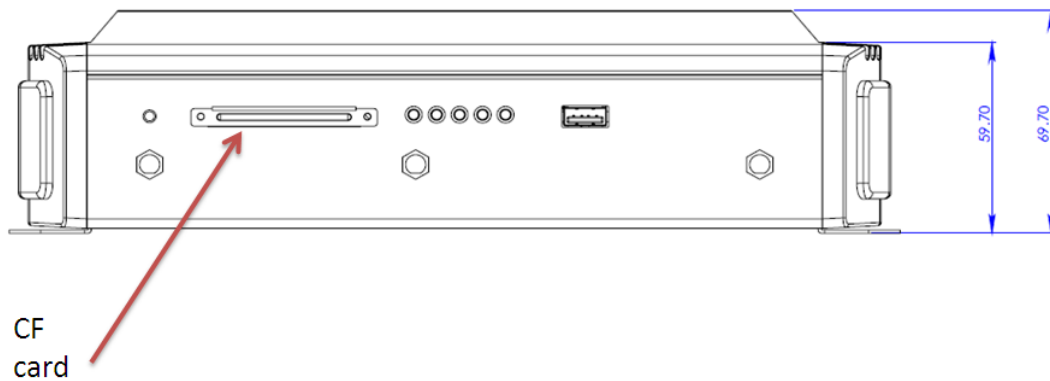
Figure 3.4 Installing CF card

USB/line out/Mic in cable locking location
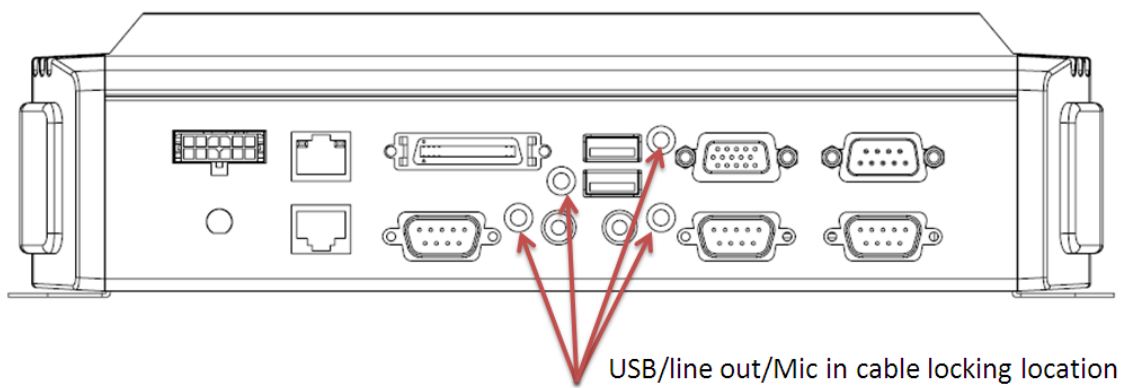
Figure 3.5 Installing cable lock

3.3.5 GPS module is unable to be installed by customer.

Please do not install GPS module by customer,

3.3.6 The Blue Tooth Module

The bluetooth module is on the side of the TREK-550 box, it is not allowed to let customer to install, it can only be installed from Advantech factory side. If you need Bluetooth feature, please choose bare bone p/n: TREK-550-A01E
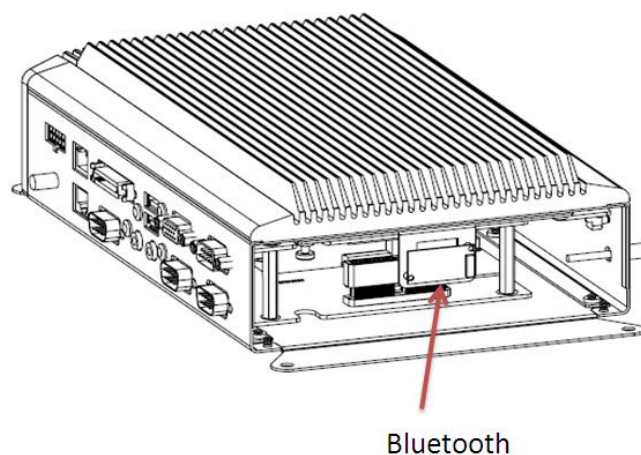
Bluetooth

Figure 3.6 Bluetooth module

3.4 Fuse

3.4.1 Fuse Specifications

- ! **Rating**: 34 V DC, 7.5 A
- ! **Size**: 19.1 x 19 mm

3.5 Paired with TREK-303 Specifications

See Appendix A

TREK-550 provides both VGA function and LCD to connect with TREK-303, it can be send out by different content, clone to VGA output.

Chapter 4

Jumper Settings and Connectors

This chapter explains how to set up the In-Vehicle Computing Box hardware, including instructions on setting jumpers and connecting peripherals, and how to set switches and read indicators.
Be sure to read all the safety precautions before beginning the installation procedure.

Sections include:
Jumpers Setting

4.1 Setting Jumpers and Switches

It is possible to configure the In-Vehicle Computing Box to match the needs of the application by resetting the jumpers. A jumper is the simplest kind of electrical switch. It consists of two metal pins and a small metal clip, often protected by a plastic cover that slides over the pins to connect them. To "close" a jumper, connect the pins with the clip. To "open" a jumper, remove the clip. Sometimes a jumper has three pins, labeled 1, 2, and 3. In this case, connect either pins 1 and 2, or pins 2 and 3.

open   closed   closed 2-3

open   closed   closed 2-3
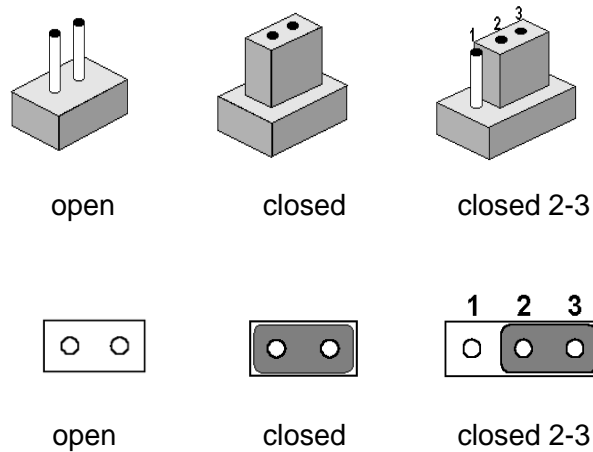
A pair of needle-nose pliers may be helpful when working with jumpers. If there are any doubts about the best hardware configuration for the application, contact the local distributor or sales representative before making any changes.

An arrow is used on the motherboard to indicate the first pin of each jumper.

4.1.1 Locations of the Jumpers and Connector
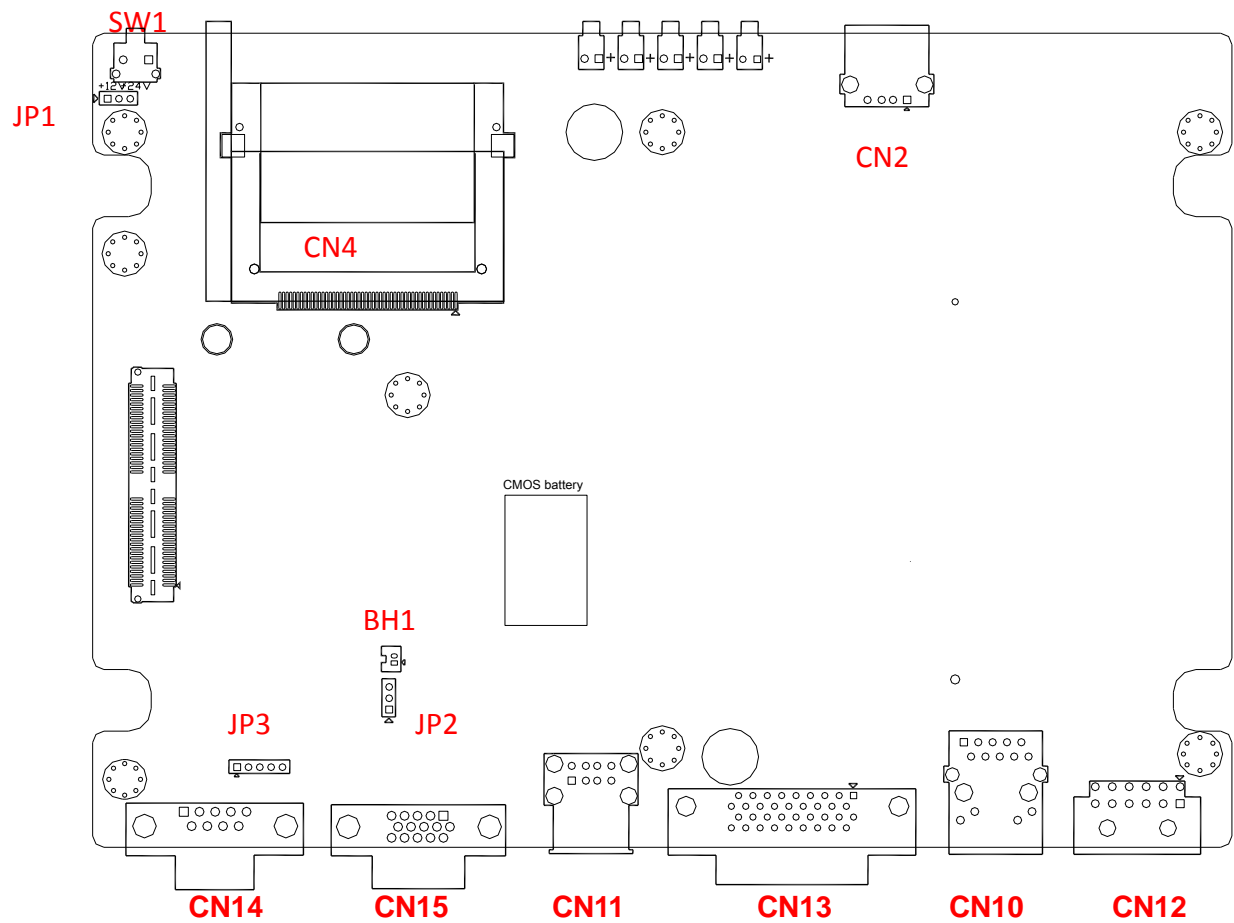
Figure 4.1 Locations of jumpers and connectors on top side the motherboard.
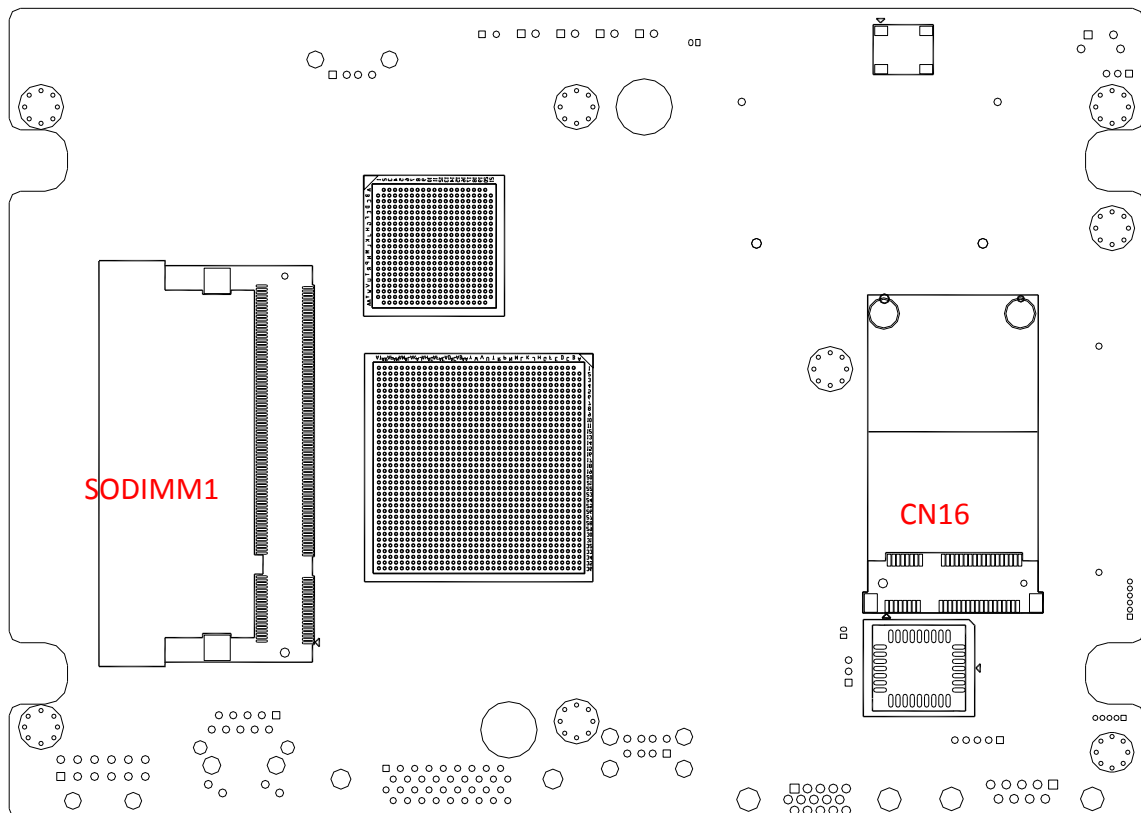
Figure 4.2 Locations of jumpers and connectors on bottom side of the motherboard.

The figures below show the locations of the jumpers and connectors on daughter board used in TREK-550.
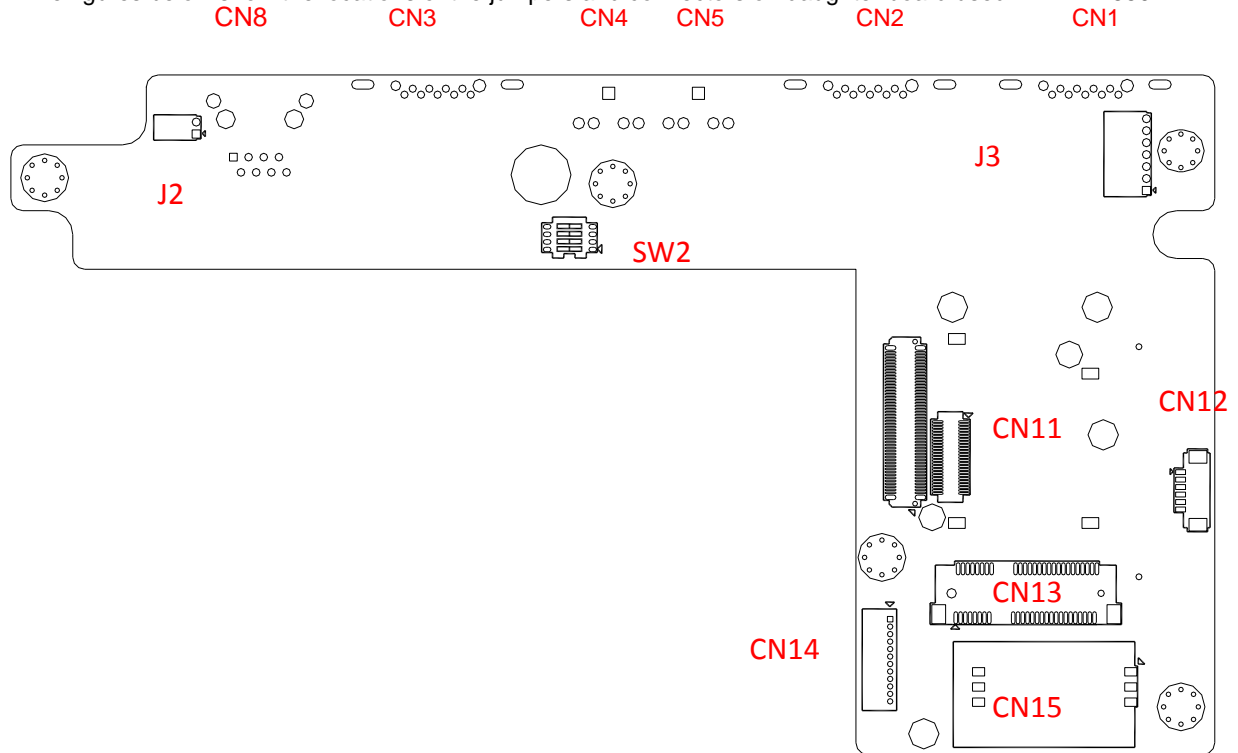
Figure 4.3 Locations of jumpers and connectors on bottom side of the daughter board.

4.1.2 Jumpers

Table 4.1.2.1: Jumpers on motherboard	
Location	**Function**
JP1	Vehicle input voltage selection
JP2	CMOS clear for external RTC
JP3	Pin9 of COM3 function selection

Table 4.1.2.2: Jumpers on daughter board	
Location	**Function**
J2	CAN bus termination selection
J3	Pin9 of COM8 function selection
SW2	DI/GPS Function selection

4.1.3 Connectors

On-board connectors link the In-Vehicle Computing Box to external devices such as hard disk drives. The table below lists the function of each connector.

Table 4.1.3.1: Connectors on motherboard	
Location	**Function**
SW1	RESET
CN2	USB connector
CN4	CF connector
CN10	LAN connector
CN11	USB connector
CN12	Power input connector
CN13	Smart Display Connector
CN14	RS-232 connector (COM3)
CN15	VGA connector
CN16	Mini-PCIe Socket (USB + PCIe interface) Mini card (standard interface)
BH1	RTC battery
SODIMM1	SODIMM connector for DDR2 SDRAM

Table 4.1.3.2: Connectors on daughter board	
Label	**Function**
CN1	RS-232 connector
CN2	4-wire RS-232 + RS-485 + RS-1708 connector
CN3	Isolated Digital I/O connector
CN4	Line-Out phone jack
CN5	Mic-In phone jack
CN8	Video-In and CAN bus connector
CN11	WWAN module connector
CN12	Bluetooth module connector
CN13	Mini-PCIe Socket (USB interface, for WWAN module) Mini card (USB interface)
CN14	GPS module connector
CN15	SIM holder

4.2 Jumper Settings

4.2.1 CMOS Clear for External RTC (JP2)

Warning!

1. *To avoid damaging the computer, always turn off the power supply before setting "Clear CMOS."*
2. *Set the jumper back to "Normal Operation" before turning on the power supply!*

Table 4.2.1: Clear CMOS / External RTC (JP1)	
Normal Operation (Default)	**Clear CMOS**

4.2.2 Power Input Voltage Setting (JP1)

TREK-550 must be configured properly according the vehicle power input ragnge.

Table 4.4.2: Power Input Voltage Selection (JP1)	
12V **Input (Default)**	**24V Input**

4.2.3 Pin 9 of COM3 Function Selection (JP3)

Pin 9 on COM3 port can be configured as RI, 5V or 12V output.
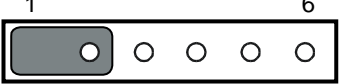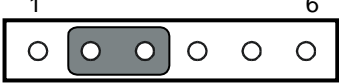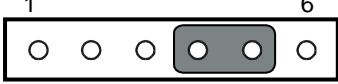
Table 4.2.3: Pin 9 of COM3 Function Selection (JP3)		
RI	+5VDC (max. 500mA)	+12VDC (max. 250mA)

4.2.4 Pin 9 of COM8 Function Selection (J3)

Pin 9 on COM8 port can be configured as RI, 5V or 12V output.

Table 4.2.4: Pin 9 of COM8 Function Selection (J3)		
RI	+5VDC (max. 500mA)	+12VDC (max. 250mA)

4.2.5 DI/GPS Function Selection (SW2)

If the GPS module with Dead Reckoning function is used, the digital inputs 3/4 will be used as inputs of GPS module. DIP switch (SW2) is used to select the function on DI 3/4 (Digital Input 3/4).

Table 4.2.5: Pin 9 of COM8 Function Selection (J3)		
	Digital Input	GPS (for Dead-Reckoning)
SW2.1	OFF	ON
SW2.2	ON	OFF
SW2.3	OFF	ON
SW2.4	ON	OFF

4.3 COM Port Interface

The computer provides totally ten serial ports for difference uses. Six of ten serial ports (COM1~COM6) are implemented with Super I/O chip and their physical address are fixed. And the other four serial ports are done by a USB serial converter, and need driver support to work. In Advantech provided WES (Windows Embedded Standard), WinXPe and Win CE 6.0 OS, the four USB-to-Serial serial ports are fixed from COM8 to COM11).

Table 4.3.1: Serial Port Function	
Port	**Function**
COM1	2-wire RS-232 (TXD/RXD) for TREK-303
COM2	3-wire RS-232 (TXD/RXD/RTS) for Touch on TREK-303
COM3	Full functional RS-232
COM4	For power management control
COM5	RS-485
COM6	J1708
COM8	Full functional RS-232
COM9	4-wire RS-232 (TXD/RXD/RTS/CTS)
COM10	For WWAN module
COM11	For WWAN module

Table 4.3.2: Serial Port Settings		
Port	**Address Range**	**Interrupt**
COM1	3F8 ~ 3FF	4
COM2	2F8 ~ 2FF	3
COM3	2E8 ~ 2EF	5
COM4	2D8 ~ 2DF	7
COM5	2E0 ~ 2E7	10
COM6	2D0 ~ 2D7	11

Chapter 5

Pin Assignments

This chapter explains pin assignments on the TREK-550.

Sections include:
- Front/side Connector
- Power connector
- Smart display connector
- RS232 Connectors
- DI/DO connectors

5.1 Front Side Connectors
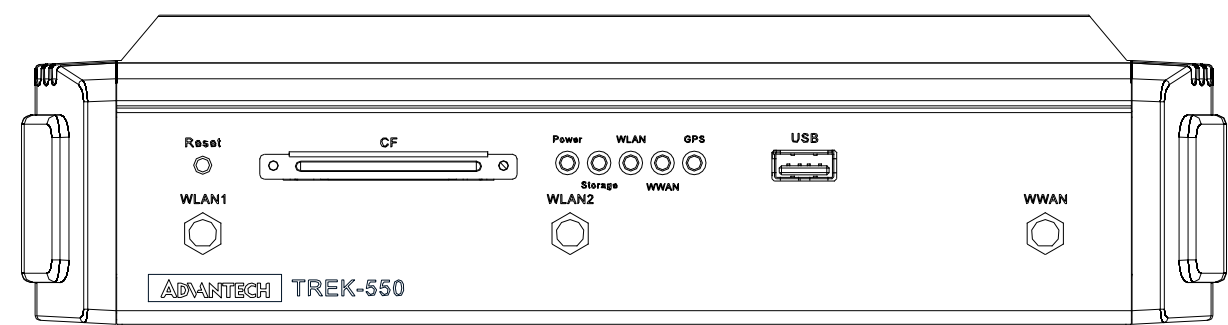
5.2 Rear Side Connectors
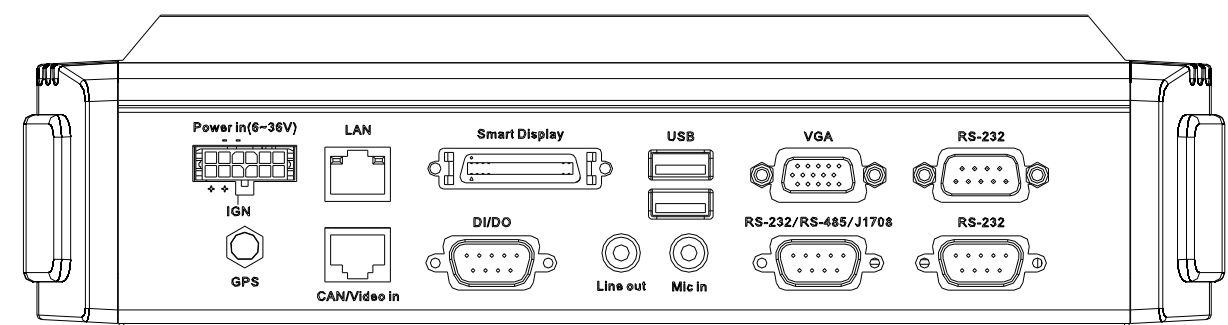
5.3 Power Connector (12/ 24V; 6 ~ 36V)
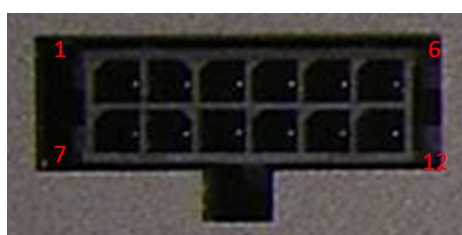
Molex Manufacturer part no. 0430451200

Table 5.3: Power Connector			
Pin	**Signal**	**Pin**	**Signal**
1	Chassis Ground	2	Ground
3	Ground	4	(Reserved)
5	(Reserved)	6	(Reserved)
7	Power Input (6~36 VDC)	8	Power Input (6~36 VDC)
9	Acc Ignition Input	10	Ground
11	(Reserved)	12	Power Button Input

5.4 Smart Display Connector
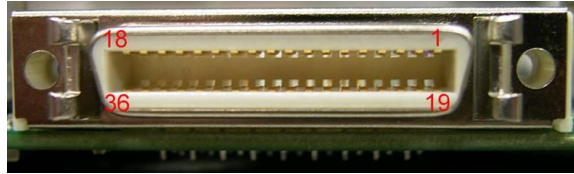
Pin	Signal	Pin	Signal
1	Backlight Enable output #	2	Panel Power Enable output #
3	LVDS Ground	4	Reset Button Input #
5	LVDS Clock +	6	LVDS Clock -
7	LVDS Ground	8	LVDS Ground
9	LVDS Data2 +	10	LVDS Data2 -
11	RS232 TXD1 #	12	RS232 RXD1 #
13	LVDS Data1 +	14	LVDS Data1 -
15	LVDS Ground	16	LVDS Ground
17	LVDS Data0 +	18	LVDS Data0 -
19	USB D-	20	USB D+
21	USB Ground	22	USB Ground
23	+12VDC output (+/- 5%, max 1A)	24	+12VDC output (+/- 5%, max 1A)
25	+12VDC output (+/- 5%, max 1A)	26	+12VDC output (+/- 5%, max 1A)
27	Power Ground	28	Power Ground
29	Power Ground	30	Power Ground
31	RS232 TXD2 #	32	RS232 RXD2 #
33	RS232 RTS2	34	Power Button Input #
35	Audio Ground	36	Mono. Line-out

Table 5.4: Smart Display Connector

5.5 RS-232 Connector (COM3, COM8)
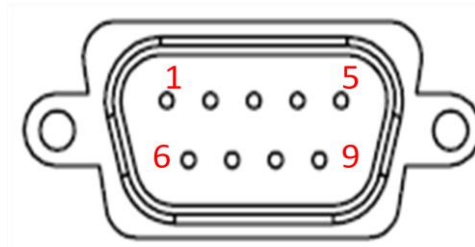
Table 5.5: RS-232 / RS-485 / J1708 Connector			
Pin	**Signal**	**Pin**	**Signal**
1	RS-232 DCD	2	RS-232 RXD
3	RS-232 TXD	4	RS-232 DTR
5	RS-232 Ground	6	RS-232 DSR
7	RS-232 RTS	8	RS-232 CTS
9	RS-232 RI / +5V(max. 500mA) / +V12 (max. 250mA)		

5.6 RS-232 (COM9) / RS-485 (COM5) / J1708 (COM6) Connector
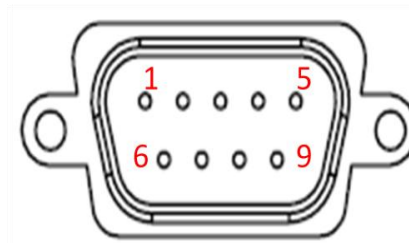
Table 5.6: RS-232 / RS-485 / J1708 Connector			
Pin	**Signal**	**Pin**	**Signal**
1	RS-232 RTS	2	RS-232 RXD#
3	RS-232 TXD	4	RS-232 CTS
5	Ground	6	RS-485 D-
7	RS-485 D+	8	J1708 D-
9	J1708 D+		

5.7 DI / DO Connector
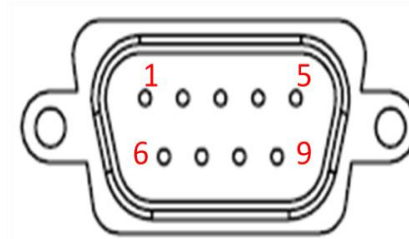
Table: 5.7: DI / DO Connector			
Pin	**Signal**	**Pin**	**Signal**
1	Isolated Dry Contact Input 1	2	Isolated Dry Contact Input 2
3	Isolated Dry Contact Input 3	4	Isolated Dry Contact Input 4
5	Isolation Ground	6	Isolated Relay Driver Output 1
7	Isolated Relay Driver Output 2	8	Isolated Relay Driver Output 3
9	Isolated Relay Driver Output 4		

5.8 CAN / Video-In Connector
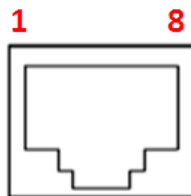
Table 5.8: CAN / Video-In Connector			
Pin	**Signal**	**Pin**	**Signal**
1	CAN_H	2	CAN_L
3	CAN_SHIELD	4	CAN_SHIELD
5	Video In 2	6	Video Ground
7	Video In 1	8	Video Ground

5.9 LED indicator

System power indicator	This system power indicator is a red LED, controlled by hardware. When the system is in NORMAL mode, this LED will be lit on. In other modes, this LED will be lit off.
GPS activity indicator	This GPS activity indicator, a blue LED, is used to show the GPS activity. This LED is controlled directly by GPS chips.
WLAN activity indicator	This WLAN activity indicator, a green LED, is used to show the activity of installed WLAN module. This LED is controlled directly by WLAN module.
WWAN activity indicator	This WWAN activity indicator, a green LED, is used to show the activity of installed WWAN module. This LED is controlled directly by WWAN module.
User-defined indicator	This user-defined indicator, a green LED, is used for customization. This LED is controlled by Software.

Red (power) **Green (Storage access)** **Green (WLAN data transfer)** **Green (WWAN link)** **Blue(GPS operation)**

Chapter **6**

Software demo utility
setup

This appendix explains the
software demo utility for
TREK-550.

Sections include:
- Introduction
- How to set up demo utility

6.1 Introduction

To make the hardware easier to access for programmers, Advantech has developed a demo utility in order to let customer test the functions on TREK-550. This document describes detailed information for each Advantech demo utility so that application developers can become more familiar with using them.

For technical support, contact Advantech application engineers worldwide.

For news updates, visit our website: **www.advantech.com**

6.1.1 Execute J1939 demo utility

This section explains how to install the Advantech demo utility in Windows XP Pro / Embedded.

1. Execute the test program called "IMC_Demo"

Figure 6. 1 IMC demo utility

2. Click J1939: customer may connect directly to the truck; we use a car simulator board below to explain how J1939 protocol can be executed.
   First, connect to the simulator board to TREK-550 CAN port and console PC, once the simulator is powered on (connect to the truck), you can start getting the data, just click [Read], you may get the data you need from the car simulator, click [Read], you may transfer the data to Console

   CAR simulator vendor name:
   Özen Elektronik LTD mOByDic 1700
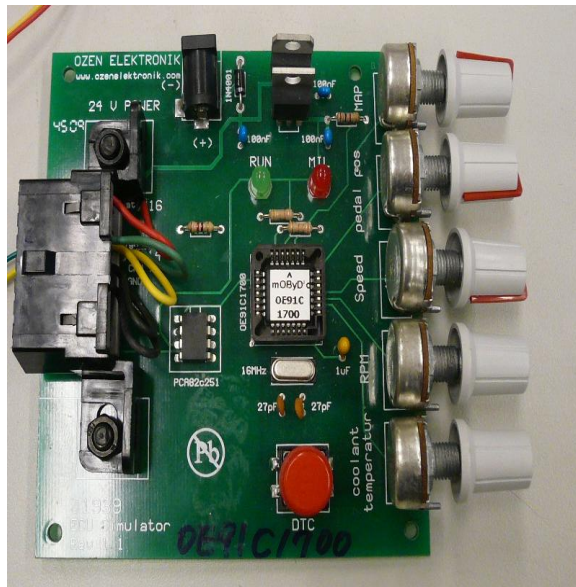
Figure 6.2   J1939 truck simulator
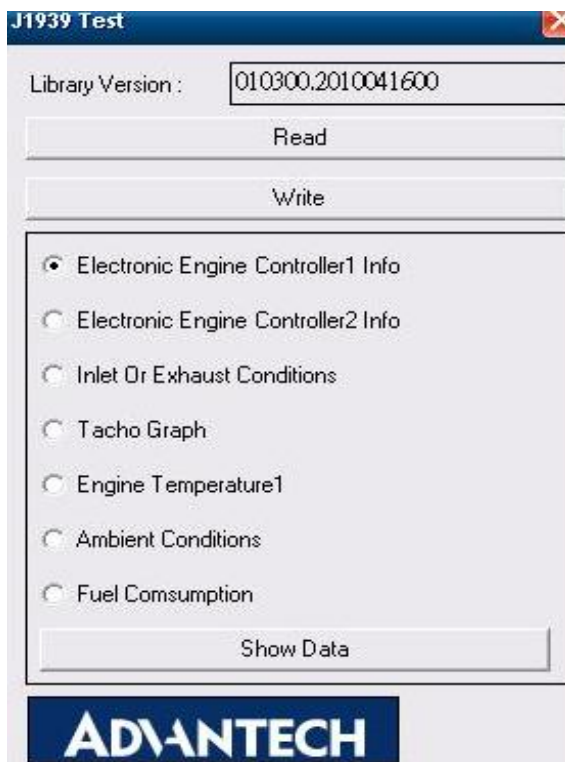
Figure 6.3 J1939 test -1   **Figure 6.4 J1939 test -2**
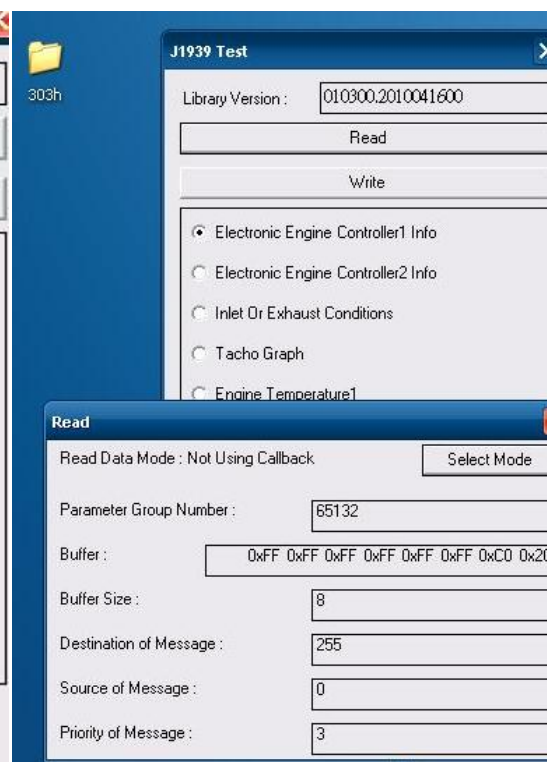
6.1.2 CAN Test

1. **CAN**: Console PC, install **[PCAN_USB-to-CAN]** test program, and use USB to CAN fixture to connect to TREK-550 CAN port.
2. Execute PCAN-View USB→ Set Baud rate 250kBit/s→ Select [Extended]→OK→ Transmit → New → ID(Hex) key in number → Data key in any number→[Period] key in 100ms→Click [Extended Frame]→OK. See below figure 6.
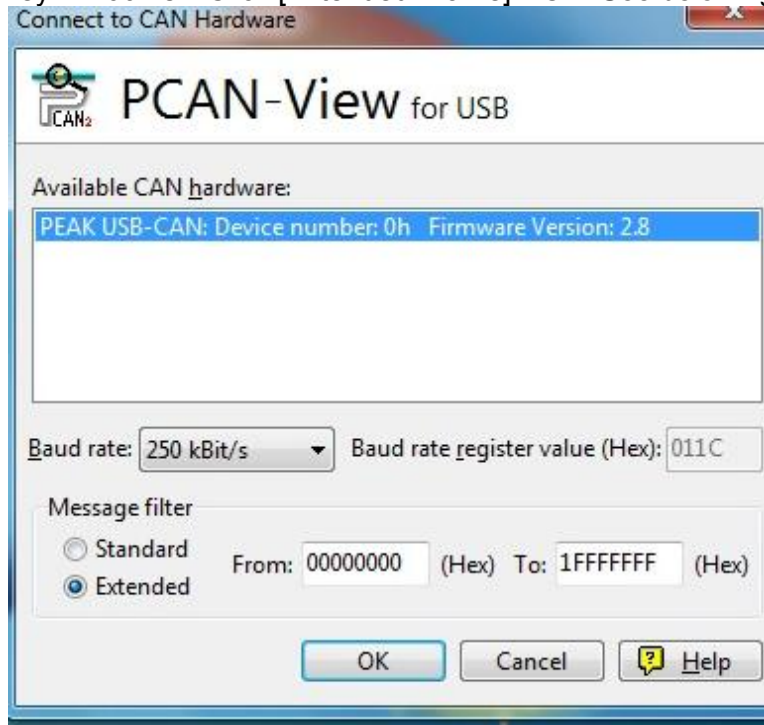
Figure 6. 5 PCAN-View for USB -1
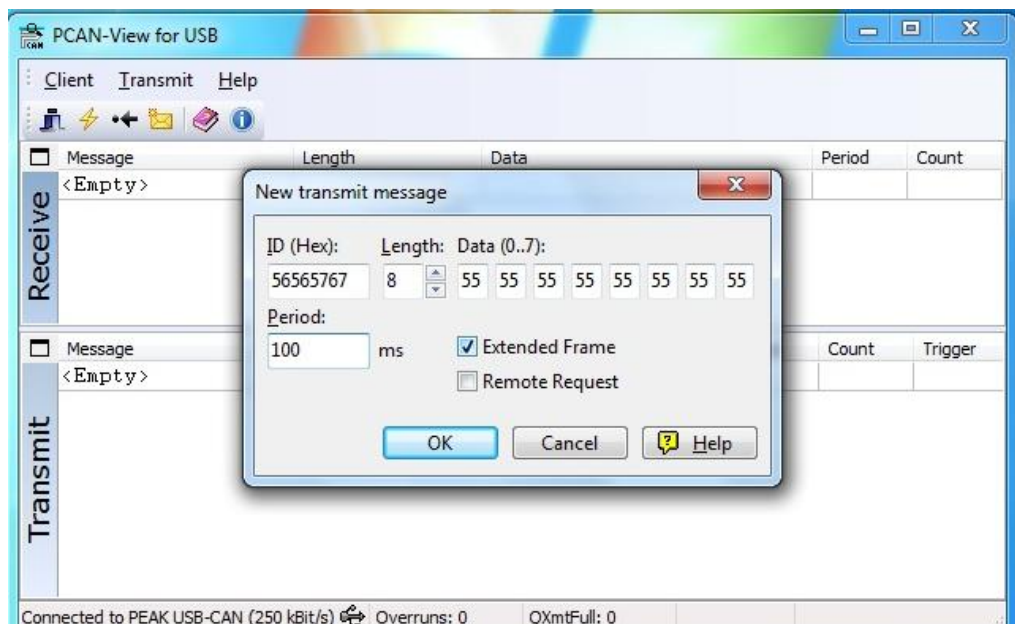
Figure 6. 6 PCAN-View for USB -2

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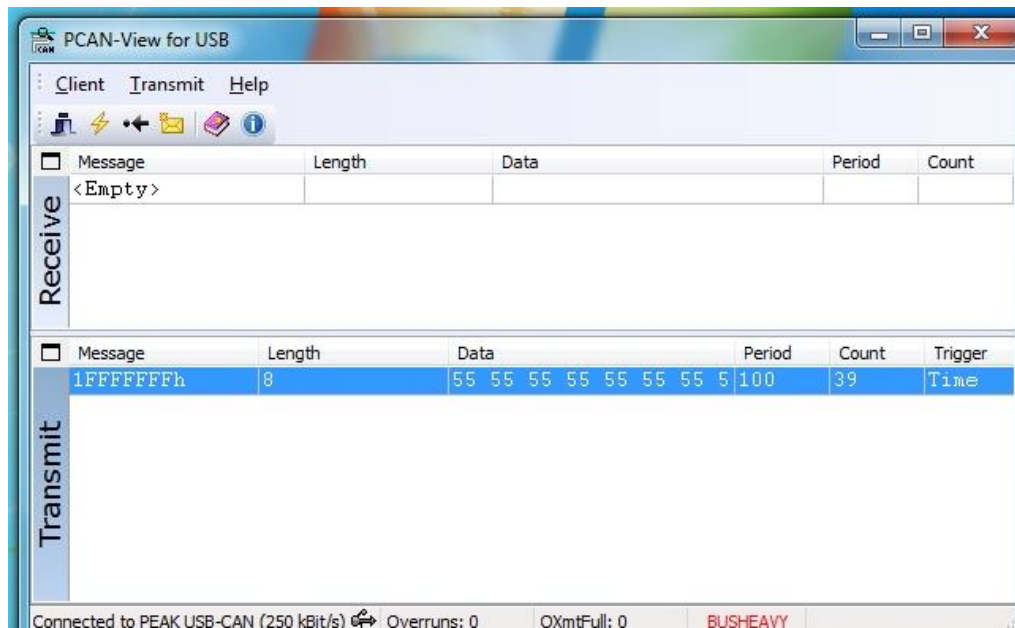
Figure 6. 7 PCAN-View for USB -3

3. Then you may read the data of TREK-550 from Console PC, in the same time, you may also press [Write Data] to write to Console PC. As for Filter Message, it can filter out the message you don't need, and keep the message you need. See below Figure 6.
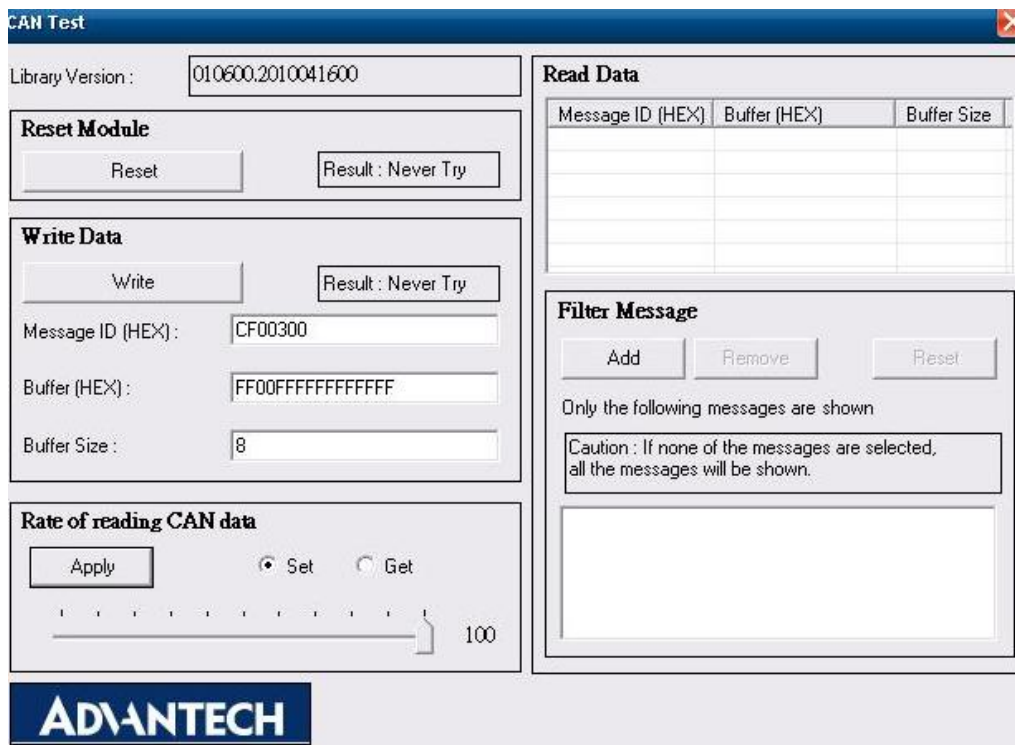
Figure 6. 8 CAN test
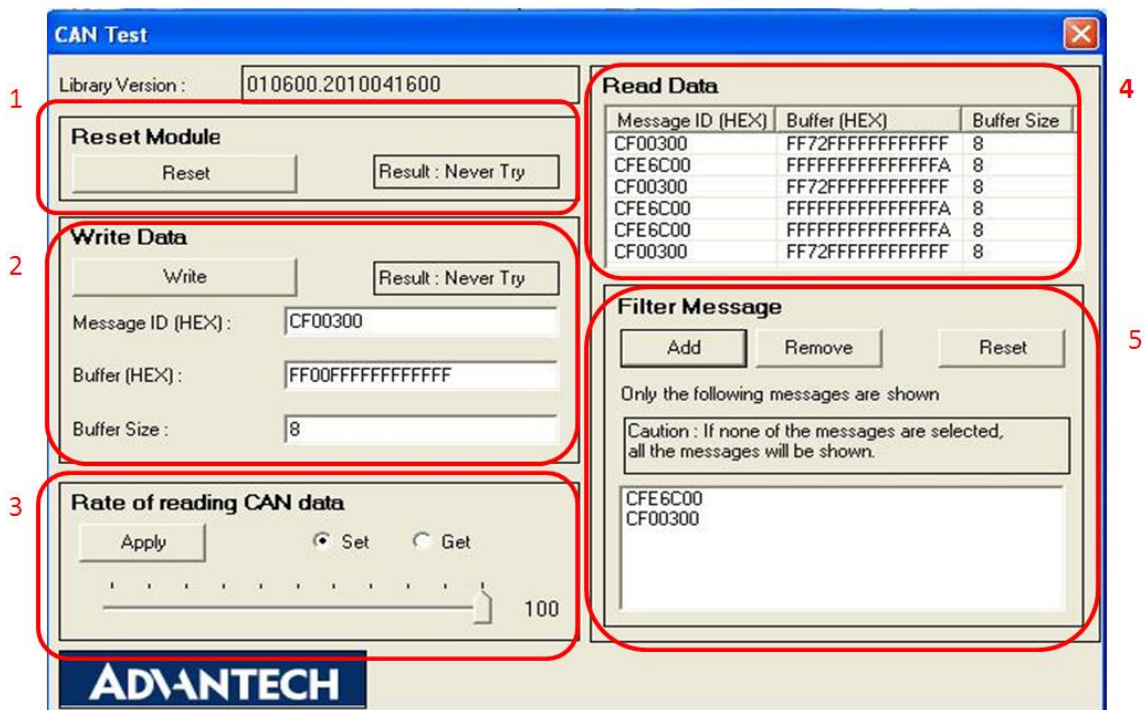
Figure 6. 9 CAN test-2

1. Reset the module
2. Transmit CAN message
3. Set the polling rate of CAN message reception
4. Received CAN message.
5. Set up the filter of CAN message (only show the message ID)

6.2 RTC test

Execute "RTC test"

1. **For RTC Time setting**: You may set year, month, date, and time show as below.

Figure 6.10 RTC test -1   **Figure 6.11 RTC test -2**

Figure 6. 12 RTC test -3   **Figure 6. 13 RTC test -4**

2. **RTC Alarm Setting**: You may also set Alarm time; you may wake up the system by the time you have set. Please refer to below figure 6.

Figure 6.14 RTC test -5

6.3 Power Management

6.3.1 Power management Mechanism

Normal Power Management Flow

Low Battery Protection

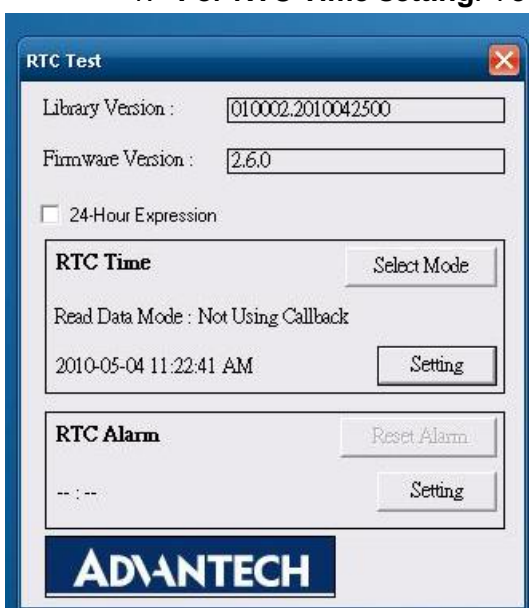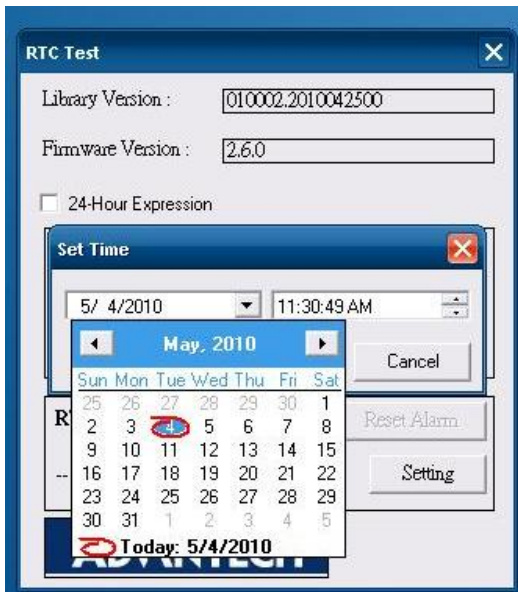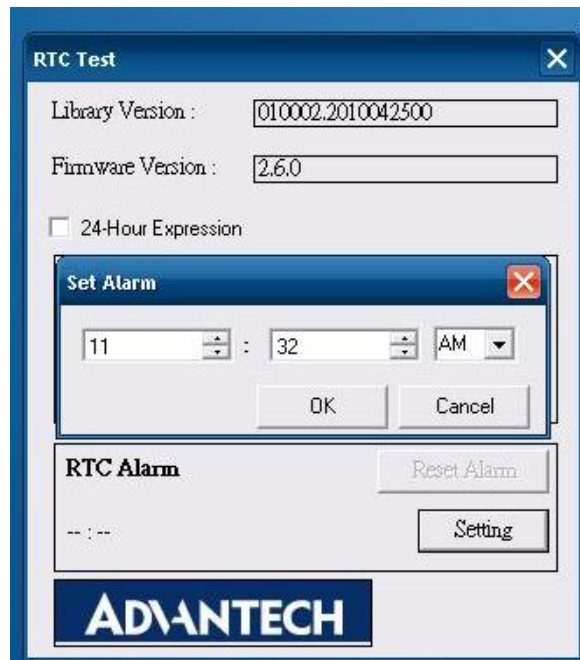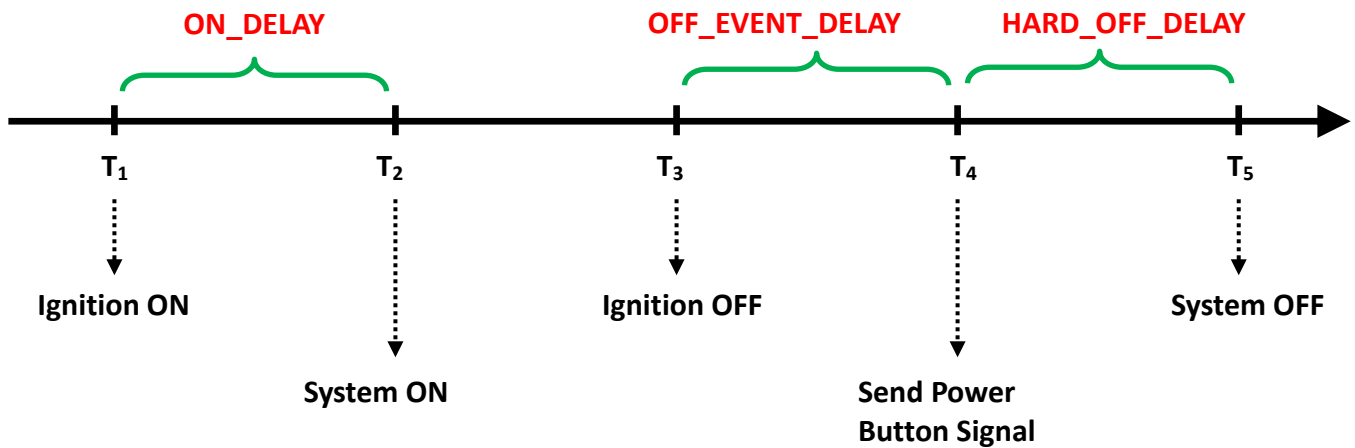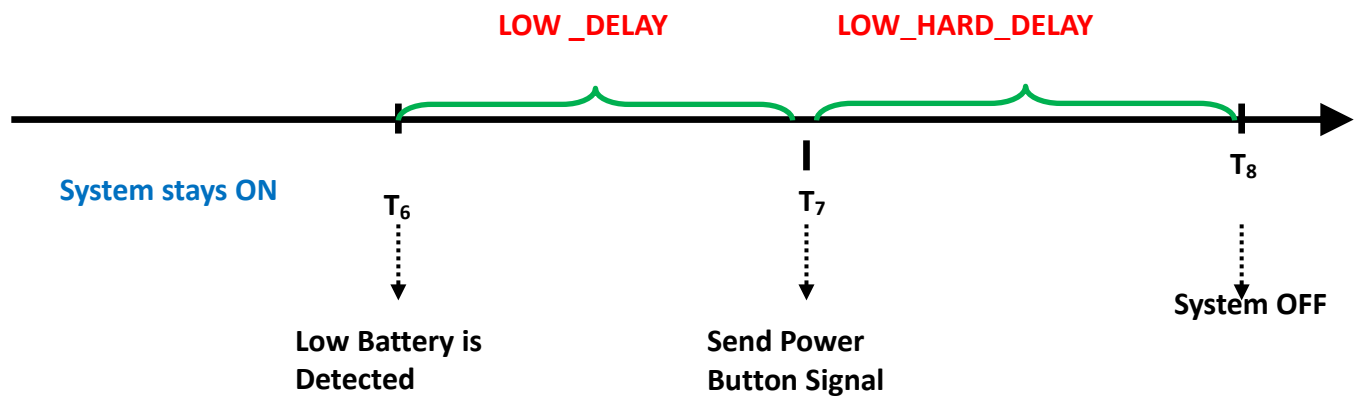|	
Before T$_1$	The system stays off. Car power is fed in, but Ignition is OFF.
T$_1$	Ignition is ON and the **ON_DELAY** is starting to count down.
T$_1$ ~ T$_2$	This duration is and it is ranged from 1 to 18000 seconds.
T$_2$	Once the **ON_DELAY** is over, the system will stay On or OFF, depending on the BIOS setting "POWER-ON after Power Fail". If "POWER-ON after Power Fail" is set as ON, the system will be powered ON. If "POWER-ON after Power Fail" is set as OF, the system will stay OFF and you could press the power button to turn on system.
T$_2$ ~ T$_3$	The system is under normal operation.
T$_3$	At this time, the Ignition is OFF, and **OFF_EVENT_DELAY** is starting to count down.
T$_3$ ~ T$_4$	This duration is **OFF_EVENT_DELAY** and it is ranged from 1 to 18000 seconds.
T$_4$	When the **OFF_EVENT_DELAY** is over, the system will send a power button signal to the OS and the user application should prepare the shutdown process. The **HARD_OFF_DELAY** is starting to count down.
T$_4$ ~ T$_5$	This duration is **HARD_OFF_DELAY** and it is ranged from 1 to 18000 seconds.
T$_5$	When the **HARD_OFF_DELAY** is count to zero, the system power is removed abruptly to avoid extra and abnormal power drain from car battery. This parameter is fixed with a value of 60 seconds.
After T$_5$	The system stays off.
Before T$_1$	The system stays off. Car power is fed in, but Ignition is OFF.
T$_1$	Ignition is ON and the **ON_DELAY** is starting to count down.
T$_1$ ~ T$_2$	This duration is and it is ranged from 1 to 18000 seconds.
T$_2$	Once the **ON_DELAY** is over, the system will stay On or OFF, depending on the BIOS setting "POWER-ON after Power Fail". If "POWER-ON after Power Fail" is set as ON, the system will be powered ON. If "POWER-ON after Power Fail" is set as OF, the system will stay OFF and you could press the power button to turn on system.
T$_2$ ~ T$_3$	The system is under normal operation.
T$_3$	At this time, the Ignition is OFF, and **OFF_EVENT_DELAY** is starting to count down.
T$_3$ ~ T$_4$	This duration is **OFF_EVENT_DELAY** and it is ranged from 1 to 18000 seconds.
T$_4$	When the **OFF_EVENT_DELAY** is over, the system will send a power button signal to the OS and the user application should prepare the shutdown process. The **HARD_OFF_DELAY** is starting to count down.
T$_4$ ~ T$_5$	This duration is **HARD_OFF_DELAY** and it is ranged from 1 to 18000 seconds.
T$_5$	When the **HARD_OFF_DELAY** is count to zero, the system power is removed abruptly to avoid extra and abnormal power drain from car battery. This parameter is fixed with a value of 60 seconds.
After T$_5$	The system stays off.

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When the system is ON, and
      (1) the car battery voltage (DC input) is lower than **LOW_THRESHOLD** (at T_6)
      (2) and this situation lasts for **LOW_DELAY**,
, then the system will send Power Button signal to OS (at T_7) to start the shutdown process.
At this time (T7), the **LOW_HARD_DELAY** is starting to countdown.
Once **LOW_HARD__DELAY** is over, the system power is removed abruptly.

LOW_DELAY is ranged from 1 to 3600 seconds.
LOW_HARD_ DELAY is fixed with a value of 60 seconds.

Note:

How the low-battery event is raised or canceled:
The minimum value on LOW_DELAY parameter is 1 second. If the car voltage remains lower than the LOW_THRESHOLD in the duration of LOW_DELAY, the low-battery event will be raised and immediately send a power button press signal to OS.
During the duration of LOW_DELAY, if the car battery voltage is back to be higher than LOW_THRESHOLD, the LOW_DELAY will be reset to predetermined value and stop count down.

Therefore, the LOW_DELAY parameter acts as a filter to prevent incorrect low-battery-event from happening.

6.3.2 Power Management utility program

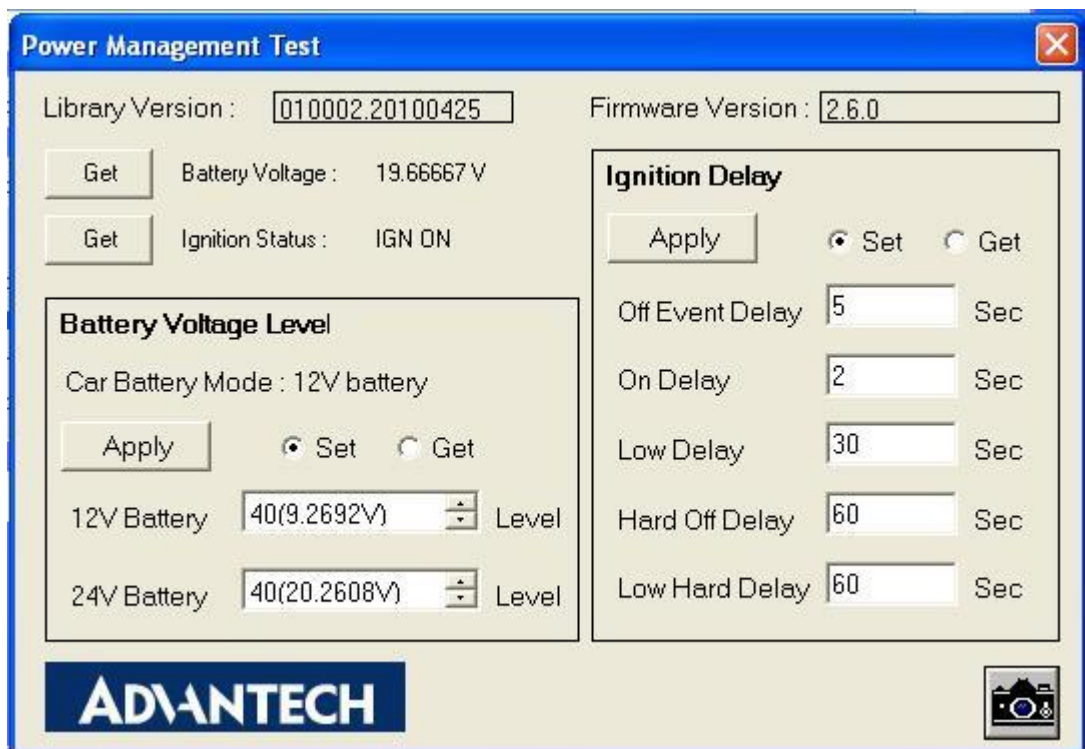Execute IMCDemo.exe file, see the icon below.

IMCDemo.exe
IMC XP Demo
Advantech

6.3.3 Power Management Parameter settings

The parameters for power management on TREK-550 could be set by Demo utility (see the image below) or SDK/API.

Figure 6.15 Power management test utility

1. **Off Event Delay**: It means after 5 seconds delay from receiving of ignition OFF signal, EC controller will send a shutdown event to make system start shutdown process

2. **On Delay:** It means after 2 seconds from receiving of ignition ON signal, EC controller will send a power-on event to make system start booting process.

3. **Low Delay:** It means after 30 seconds delay from receiving of Battery Voltage LOW signal, EC controller will send a shutdown event to make system start shutdown process.

4. **Hard off Delay** – it means after 60 seconds from shutdown event, EC controller will force power cut off at the same time.

5. **Low Hard Delay** – it means after 60 seconds from Low Voltage shutdown event, EC controller will force power cut off at the same time

6. **Read current status:** Execute "Power management test", the Battery Voltage Level has 12V and 24V, you may set from 0~65 levels, press "Get" to know the value you set.

7. **Set the value**
   The buttons which indicates by blue squares can SET the value you want to the system.

8. **Battery voltage level:** You could set the LOW battery voltage value by changing level 0 to 40. For example, if you're using 12V battery, and you set level as 50, it means the LOW battery voltage value is 10.147 + 50 x 0.0146 = 10.877 V. Checks which source you're connecting. DC supply or 12V or 24V battery. Check the ignition signal and see if it's ON or OFF.

6.3.4 TREK-550 power consumption

OS: Windows Embedded Standard
Burn-in test V6.0

	Idle Mode	100% Burn-in Test Mode	Off mode (S5)
w/o TREK-303H	12V / 1.04A	12V / 1.20A	12V / 1.75mA
w/ TREK-303H	12V / 1.51A	12V / 1.94A	

*Doesn't support S1, S3, S4

6.4   GPIO Test

1. Execute I/O Test, connect GPIO loopback, click Pin0→Set, the end which Read the signal, the bulb will be light up, like wise to Pin1~Pin3. Next pick Digital output to execute the same procedure. See **figure 6.**

Figure 6.16 DI/O test

a. **Digital Output ➔ isolated relay driver output**
b. **Digital Input ➔ isolated dry contact input**

For Digital In
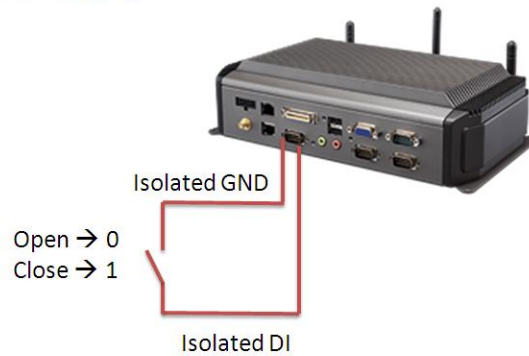
Figure 6.17 Digital in

For Digital Out
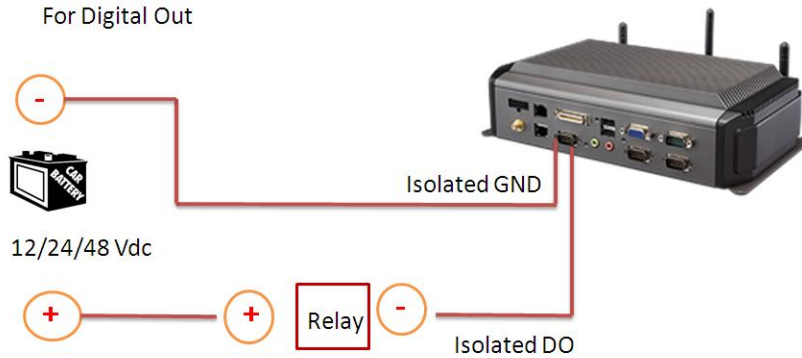
DO could control 12/24/48 Vdc @ 150mA relay without over wheeling diode

Figure 6.18 Digital out

6.5 Video in Test

There are two video in, please connect camera on each port, CAM1 & CAM2, choose Channel 1 on [Switch to], then panel will show the image which camera1 has taken, it will recover to the same status after 10 sec, then change to Channel 2, Panel will show what appears on camera2, and come back to the same status after 10 sec.

Figure 6.16 Video test utility

6.6   Dead reckoning

We will need a 3-axis accelerometer that our software can talk to. We use this to characterize driver behavior such as hard accelerations, braking, and cornering. This also can tell us other significant information

that can be used in accident reconstruction, etc… This one of the crucial items that we asked for in our specification and our customers' expectations are making this a definite must have in our system. We won't be needing any dead reckoning functionality at this point in time… this is something we may want to include in the future but in order to get cost down we have decided to forgo this at this time.   Please confirm that we will have access to this or another accelerometer.

6.7   G- sensor

A code example is ready for customer reference. This code example ONLY introduces how to access the G-sensor under Windows XP/XPe, but users must control the G-sensor and develop their SW application by themselves. Therefore, customer can decide how to set the sensitivity value when to trigger G-sensor to send signal to CPU and to back end server through WWAN module. G-sensor is located on the motherboard inside the TREK-550. Please refer the link (http://www.analog.com/static/imported-files/data_sheets/ADXL345.pdf) for the G-sensor datasheet.

Appendix A

TREK-303

This appendix explains the
TREK-303 detailed information.

Appendix A   Paired with TREK-303 Specifications

TREK-303 Specification

	Models	TREK-303R-LA0E	TREK-303R-HA0E
Display	Design Compatible Models	paired with TREK-510	paired with TREK-550
	Resolution(pixel)	480 x 234	800 x 480
	Number of Colors	262 K (supports 18-bit)	262K (supports 24-bit)
	Pixel Pitch	0.107 (W) x 0.37 (H)	0.2168 (H) x 0.2168 (V)
	Brightness (cd/m²)	500 (typical) without touchscreen	500 (typical) without touchscreen
	View Angle (R/L/B/T)	70° / 70° / 60° / 60°	70° / 70° / 60° / 60°
	Contrast Ratio	300	500
	Lamp Life (hrs)	10,000 (min)	50,000 (min)
	Lamp Type	CCFL	LED
Touchscreen	Touchscreen	4-wire resistive (GFG 4-wire design reserve)	
Front plane	Speaker	2 watts	
	Hotkey	Supports 5 hotkeys (user defined)	
	Brightness Control	Light sensing (default), manually controlled by button (optional)	
	USB Host	x 1	
Back plane	Power /Wake Up Button	Yes	
	Reset Button	Yes	
Power	DC Input	12V +- 5%	
	Power Consumption	~8W (Max.)	~7W (Max.)
Mechanical	Mounting	Design compatible with RAM mount	
	Material	PC	
	Weight	1 kg	
	Dimensions	244 x 160 x 41 mm	
	IP rating	IP54 (without I/O connector)	
Environment	Operating Temperature	-30 to + 70° C	
	Storage Temperature	-40 to + 80° C	
	Vibration	MIL-STD-810F, SAE J1455 4.9.4.2	

> **Note!**   1.   *The Brightness control is adjusted by the auto light sensor in the front panel as default; it is also defined by button on the front panel* by manual.
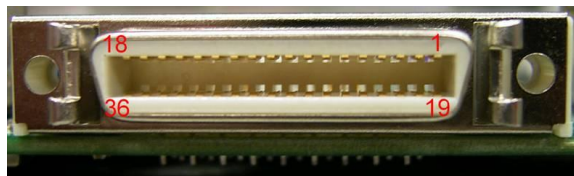>
> 2.   *The color LCD display*

A. USB Host
B. 5 programmable hotkeys
C. D. Brightness control
E. Power LED
F. Light sensor
G. Speaker

**Note: Backlight off: Press C button to the lowest level**

Power button LVDS connector

Pin out for TREK-303 LVDS connector

Table A.2: Smart Display Connector			
Pin	**Signal**	**Pin**	**Signal**
1	Backlight Enable input #	2	Panel Power Enable input #
3	LVDS Ground	4	Reset Button Input #
5	LVDS Clock +	6	LVDS Clock -
7	LVDS Ground	8	LVDS Ground
9	LVDS Data2 +	10	LVDS Data2 -
11	RS232 RXD1 #	12	RS232 TXD1 #
13	LVDS Data1 +	14	LVDS Data1 -
15	LVDS Ground	16	LVDS Ground
17	LVDS Data0 +	18	LVDS Data0 -
19	USB D-	20	USB D+
21	USB Ground	22	USB Ground
23	+12VDC input (+/- 5%, max 1A)	24	+12VDC input (+/- 5%, max 1A)
25	+12VDC input (+/- 5%, max 1A)	26	+12VDC input (+/- 5%, max 1A)
27	Power Ground	28	Power Ground
29	Power Ground	30	Power Ground
31	RS232 RXD2 #	32	RS232 TXD2 #
33	RS232 RTS2	34	Power Button Input # (connect with system box)
35	Audio Ground	36	Mono. Line-in

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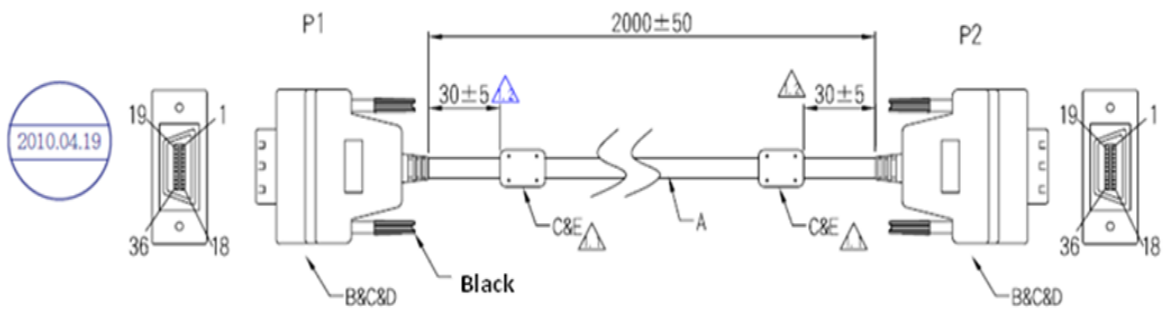
Pin assignment

P1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
P2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Color	Brown	White	Ground	Brown	red	white	Ground	Ground	Orange	white	red	Orange	yellow	white	Ground	Ground	Green	white

19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Blue	white	Ground	yellow	Green	Blue	Purple	Grey	white	Black	Black Brown	black red	Orange	Black Yellow	Black green	Black blue	Black purple	Black grey

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TREK-303 Hotkey Utility
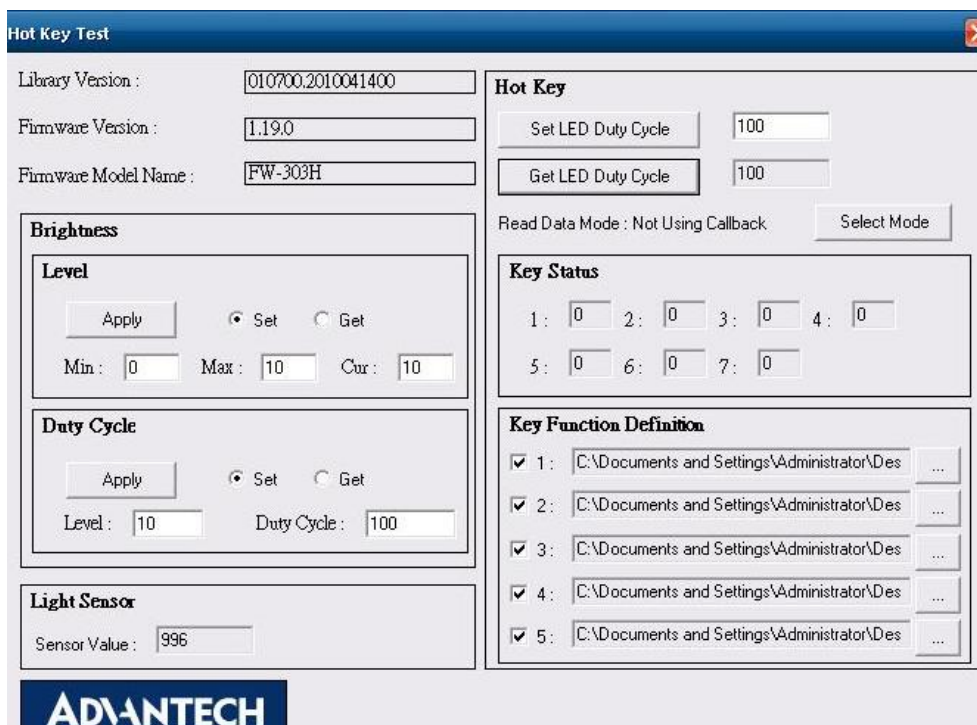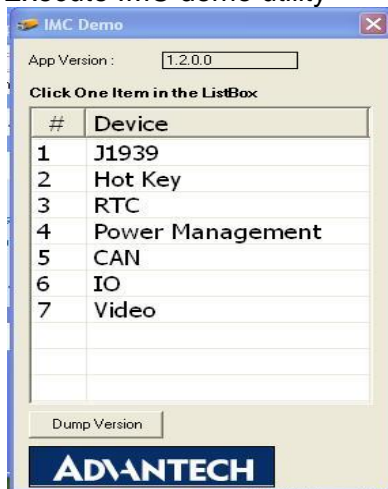Execute IMC demo utility

Figure A. 1 Hotkey utility

1. Execute "**Hot Key test"** program ➔
2. **Brightness level:** You may set panel's brightness from level 0 ~10, total 10 levels, when you finish setting the brightness level you want, please click "Apply". If you want to check the current brightness level of TREK-303, please click "Get".
3. **Duty cycle:** You may set every level's brightness strength, total 10 levels, when you finish setting the brightness strength for each level, please click "Apply". If you want to check the current brightness strength on certain level of TREK-303, please click "Get".
4. **Light sensor:** When the sensor has detected the change of the brightness in the environment, the value will change. The lowest level of brightness, the

lowest value it is presented. On the contrary, the highest level of brightness, the highest value it is presented.

5. **Hotkey:** You may set the hotkey LED light brightness, the value is from 0 ~100.
6. **Key Status:** When you press Hot key, the status will change from 0 to 1.
7. **Key function Definition:** You may set the parameter to connect the application program of the hot key.

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